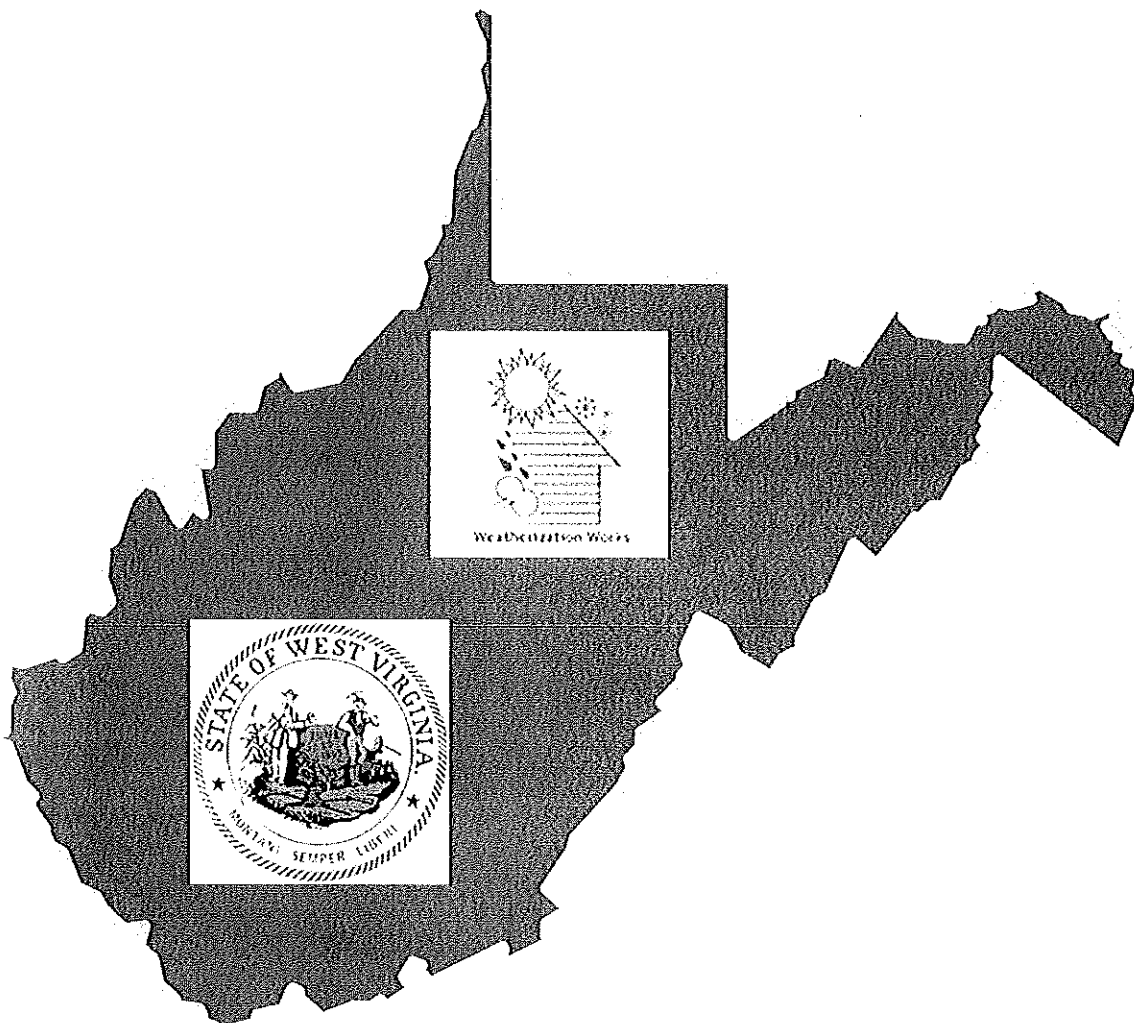


# WEST VIRGINIA WEATHERIZATION ASSISTANCE PROGRAM



## PY2011 DOE STATE PLAN

July 1, 2011 — June 30, 2012

Governor's Office of Economic Opportunity  
700 Washington Street East, 4th Floor  
Charleston, WV 25301  
(304) 558-8860

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**BUDGET INFORMATION - Non-Construction Programs**

1. Program/Project Identification No. EE0000085		2. Program/Project Title The Weatherization Assistance Program enables low-income families to permanently reduce their energy bills by making their homes more energy efficient. During the last 32 years, the U.S. Department of Energy's (DOE) Weatherization Assistance Program has provided weatherization services to more than 6.2 million low-income families.	
3. Name and Address West Virginia, State of 950 Kanawha Boulevard East Charleston WV 25301-		4. Program/Project Start Date 07/01/2011	5. Completion Date 06/30/2012

**SECTION A - BUDGET SUMMARY**

Grant Program Function or Activity (a)	Federal Catalog No. (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Federal	81.042	\$ 0.00		\$ 2,020,793.00		\$ 2,020,793.00
2. STATE			\$ 0.00		\$ 0.00	\$ 0.00
3.						
4.						
5. TOTAL		\$ 0.00	\$ 0.00	\$ 2,020,793.00	\$ 0.00	\$ 2,020,793.00

**SECTION B - BUDGET CATEGORIES**

6. Object Class Categories	Grant Program, Function or Activity				Total (5)
	(1) GRANTEE ADMINISTR ATION	(2) SUBGRANTE E ADMINISTR	(3) GRANTEE T&TA	(4) PROGRAM OPERATION S	
a. Personnel	\$ 48,172.00	\$ 0.00	\$ 77,111.00	\$ 0.00	\$ 134,998.00
b. Benefits	\$ 15,897.00	\$ 0.00	\$ 25,447.00	\$ 0.00	\$ 44,356.00
c. Travel	\$ 1,142.00	\$ 0.00	\$ 28,815.00	\$ 0.00	\$ 33,736.00
d. Equipment	\$ 0.00	\$ 0.00	\$ 12,438.00	\$ 0.00	\$ 12,438.00
e. Supplies	\$ 5,540.00	\$ 0.00	\$ 12,050.00	\$ 0.00	\$ 23,753.00
f. Contract	\$ 0.00	\$ 104,758.00	\$ 0.00	\$ 1,305,982.00	\$ 1,745,965.00
g. Construction	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
h. Other	\$ 1,996.00	\$ 0.00	\$ 22,862.00	\$ 0.00	\$ 25,546.00
i. Total Direct Charges	\$ 72,747.00	\$ 104,758.00	\$ 178,723.00	\$ 1,305,982.00	\$ 2,020,792.00
j. Indirect	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00
k. Totals	\$ 72,747.00	\$ 104,758.00	\$ 178,723.00	\$ 1,305,982.00	\$ 2,020,792.00
7. Program Income	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 0.00

## U.S. Department of Energy

OMB Control No. 1910-5127

(08/05)

## WEATHERIZATION ANNUAL FILE WORKSHEET

Expiration Date: 6-30-08

Identification: EE0000085

State: WV

Program year: 2011

Budget period: 07/01/2011 - 06/30/2012

## II.3 Subgrantees

Grantee	City	Tentative	
		Funding	Units
CHANGE, Incorporated	Weirton	102,347.00	14
Coalfield CAP	Williamson	230,482.00	31
Community Action of South Eastern West Virginia	Bluefield	166,951.00	23
Community Resources, Incorporated	Parkersburg	203,674.00	28
Council of the Southern Mountains	Northfork	44,787.00	6
Eastern West Virginia Community Action Agency	Moorefield	170,441.00	23
Mountain CAP of West Virginia, Incorporated	Buckhannon	87,520.00	12
MountainHeart Community Services	Oceana	83,992.00	11
Nicholas Community Action Partnership	Summersville	31,103.00	4
North Central West Virginia Community Action Assoc., Inc.	Fairmont	365,729.00	50
PRIDE Community Services	Logan	41,893.00	6
Southwestern Community Action Council	Huntington	217,046.00	29
<b>TOTALS</b>		<b>1,745,965.00</b>	<b>237</b>

## II.4 WAP Production Schedule

Total Units (excluding reweatherized)	237
Rewatherized Units	4

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Average Unit Costs, including Reweathering, Subject to DOE Program Rules	
VEHICLE & EQUIPMENT AVERAGE COST PER DWELLING UNIT (DOE RULES)	
A Total Vehicles & Equipment (\$5,000 or more) Budget	\$0.00
B Total Units Weatherized	237
C Total Units Reweatherized	4
D Total Dwelling Units to be Weatherized and Reweatherized (B + C)	241
E Average Vehicles & Equipment Acquisition Cost per Unit (A divided by D)	\$0.00
AVERAGE COST PER DWELLING UNIT (DOE RULES)	
F Total Funds for Program Operations	\$1,305,982.00
G Total Dwelling Units to be Weatherized and Reweatherized (from line D)	241
H Average Program Operations Costs per Unit (F divided by G)	\$5,419.01
I Average Vehicles & Equipment Acquisition Cost per Unit (from line E)	\$0.00
J Total Average Cost per Dwelling (H plus I)	\$5,419.01

## II.5 Energy Savings

Method used to calculate energy savings:

WAP algorithm

☒

Other (describe below)

☐

Estimated energy savings: 57,269.00 (MBtu)

Estimated prior year savings:

Actual:

If variance is large, explain:

## II.6 Training, Technical Assistance, and Monitoring Activities

Analysis of monitoring reports, issues and concerns, tracking of trends, discussion among State WAP staff and contract field staff of new program technologies, Weatherization Program training needs and the opportunity provided by the Weatherization Training Center Grant and utilization of the WV Community and Technical College System as training delivery resources have led to the following areas as training priorities for PY2011:

Develop and implement an Estimator / Auditor certification curriculum and training that will improve the overall quality, thoroughness and accuracy of field work.

Further develop, improve and implement the Post Work Inspection certification curriculum and training that will insure the accuracy and effectiveness of field work and reduce the need for call backs.

Provide oversight, training, technical assistance and support in the development and operation of the Weatherization Training Center Grant at the New River CTC Education and Technical Training Center at Ghent, WV and WVU

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Sustainable Design Division at Morgantown, WV.

Provide oversight, training, technical assistance and support Pierpont CTC in the development and customizing of the DOE Standardized Weatherization Training Curricula to include WV WAP standards, best practices and procedures and to make accessible to subgrantee on line, at the WTC locations and throughout the WVCTC network.

Assess training needs for sub-grantee management personnel and develop training to improve efficiency and effectiveness of administrative functions.

Continue the communication, development and training on the Weatherization component of the DBA FACSPRO software to achieve more streamlined and accurate administrative functioning.

Provide training on major revisions of the WV WAP standards, best practices and procedures manual, WV WAP Field Guide and updated Finance and Administration section of the WV WAP Program Operations Manual.

Training will consist of the following:

training on the DBA FACSPRO Weatherization component changes and upgrades for program administrators;

training on revised WV WAP Standards, best practices and procedures manual, WV WAP Field Guide;

certification training for Estimator / Auditors;

a minimum of two NEAT/MHEA trainings for Estimator / Auditors;

two to three HVAC Systems Inspection courses for Estimator/Auditors, Post Work Inspectors and contractors, as needed;

certification training for Post Work Inspectors;

certification training for Client Educators;

training on lead safe weatherization, EPA rule and DOE LSW policies and procedures as needed;

OSHA 10 for Technicians and OSHA 30 for Crew Supervisors;

Weatherization Orientation training for newly hired technicians and contractors as needed;

one or two rounds (or more based on need and demand) of HVAC courses (five week curriculum) at the WV WAP WTC at the NRCTC Advanced Technology Center to train and certify new HVAC Technicians which includes training and testing for the EPA Certification for Refrigerant Recovery;

on-line training, as it becomes available, for newly hired workers and existing workers seeking certifications from the WTC and CTCs;

participation with a Weatherization Track in the WV CAP 2011-12 Education Conference;

program updates and discussion of issues at GOEO/CAA Quarterly Meetings with agency Executive Directors, as needed;

monthly weatherization conference calls with subgrantee Weatherization Coordinators and other agency staff; and attendance and conducting sessions by State Weatherization staff at appropriate out-of-state meetings, conferences, and training sessions.

Staff projects will include:

develop subgrantee management training and certification curriculum;

develop policy and training on the topics of Radon, Asbestos and VOC's;

continue to work towards obtaining BPI – Building Analyst, Building Envelope Professional and Mobile Home Certifications for all field and training staff;

continue to provide oversight, technical assistance, subject matter expertise and support to the WV CTC/WAP training and certification curricula development toward a two year Associate Degree in Applied Green Technology;

updating of WV WAP standards, best practices and procedures manual, WV WAP Field Guide;

further development of the GOEO's website Weatherization Page to include sections for current WVWAP regulations and forms and also DOE WAP rules and regulations;

continue development and oversight of lead safe weatherization practices;

further development and implementation of the WX Pro component of DBA FACS Pro software for subgrantee WAP reporting and client tracking system;

conducting training at regional and national energy and Weatherization conferences, and participation on various

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program related boards and committees;  
 continue the integration of various supplemental components with regular DOE Weatherization.  
 Lead Safe WeatherizationThe West Virginia Weatherization Assistance Program will continue to implement and enforce all rules for Lead Safe Weatherization as per guidance in related Weatherization Program Notices. Lead safe weatherization methods are being updated in the Field Standards.  
 agencies will continue to give the booklet "Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools" to all owners and occupants of dwelling units built before 1978;  
 agency documentation that LSW practices were performed as required, including crew supervisor signature acknowledging the practices and digital photos of the worksite;  
 thorough monitoring of agencies LSW practices and documentation;  
 continued training and attention to EPA's LRRPP requirements;  
 planned designation and testing of Certified Renovators for 2010;  
 insure that all WAP subgrantee agencies have the necessary Certified Renovator qualifications and credentials.  
 Monitoring PlanFiscal monitoring of each subgrantee agency will occur at least once per year. In addition to reviewing annual agency A-133 audits for program compliance, monthly expenditures and requests for reimbursement will be reviewed for appropriateness and compliance. Program management activities will also be monitored at the subgrantee agency site at least once per year, typically in a separate visit with additional reviews as necessary for agencies with more problems or cited deficiencies. Integrated software will be utilized for centralized collection of client information, installed measures and costs, and diagnostic test results. Continued development of this software will also enable desktop monitoring of administrative and inventory management compliance of the local subgrantee. Field inspections of completed dwellings will be monitored by GOEO monitoring staff, sometimes in a separate visit, with each sub grantee agency being visited at a minimum of one visit or more if needed. Agencies with more problems and cited deficiencies will be field monitored twice. Weatherization Program Specialists will inspect an estimated 10% of completed jobs. The Field Inspection Report for individual site inspection monitoring will be continually updated as the need arises. Monitoring procedures and most field tool forms are revised as necessary to improve quality control for the program year. DBA FACSPRO software will also serve as a monitoring tool to detect trends in most aspects of agency field work, such as a tendency not to perform certain measures. Desktop monitoring of completed dwelling units prior to the monitoring visit can also identify jobs for potential site inspections. Another focus of sub grantee monitoring will be the supplemental components to the Weatherization Program, including the utility partnership programs, the Energy Crisis Intervention Program, the Electrical Upgrade Component, and the Weatherization Related Home Repair Component. These projects provide additional funding for the WV WAP, enable additional work to be done on a large percentage of weatherized homes, and make possible the weatherization of some homes that may have had to be deferred or rejected because of necessary repairs that are outside the realm of the DOE WAP. Monitoring will focus on the correct utilization, tracking, and accountability of the supplemental component funds.

## II.7 DOE-Funded Leveraging Activities

II.7.1 Other Funding Sources As usual, the West Virginia Weatherization Assistance Program will utilize Low-Income Home Energy Assistance Program (LIHEAP) funds in the operation of the program. LIHEAP funds are used in accordance with DOE rules with a few exceptions, most notably the maximum average cost per unit rule. LIHEAP funds may be used for jobs costing above the DOE maximum, or to supplement DOE funds on specific jobs. LIHEAP funding of \$6,093,494.00 will be utilized in Program Year 2011. Upon approval of the DHHR/LIHEAP Work Plan, LIHEAP funds will be utilized for the following weatherization related components: Electrical Upgrade, Weatherization Related Home Repair, and the Energy Crisis Intervention Program (ECIP). Through participation of rate-case energy advocacy intervention activity at the Public Service Commission of West Virginia, the West Virginia Community Action Partnership (WVCAP) continues to work and advocate for utility-weatherization leveraging partnership initiatives. Dominion Hope Gas: In spring of 2009, WVCAP had intervened in a Dominion Hope Gas Company rate increase case in

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northern West Virginia. This case became complicated as the Company was also put up for sale in an acquisition case, in which negotiations became very complicated. Although a new low-income weatherization program was agreed to in negotiations, the sale of the Company fell through and all proceedings were tabled. Now in April 2011, Dominion Hope has re-established dialogue to begin the discussion of a possible low-income weatherization partnership for the Company's low-income rate payers. AEP dba Appalachian Power Company/Wheeling Power Company: Also in early 2009, WVCAP had intervened in an Appalachian Power Company/Wheeling Power Company filing at the Public Service Commission of West Virginia, in a rate increase request. As a result of that proceeding, the PSC ordered a DSM Working Group be established with recommendations to the Commission (WVCAP participated) and that the Company propose a Portfolio of DSM Programs to be run in their service area. Through various meetings and proceedings over a period of 18 months, in fall of 2010 the PSC of WV ruled that the Companies could offer various DSM programs for a two year period of time, beginning in the spring of 2011. A Low-Income Weatherization DSM Program was approved, for gross costs of approximately \$470,000 in year one (\$367,050 WAP), and \$622,210 (\$489,400 WAP) in year two. Allegheny Power Company (now FirstEnergy)- In a rate case settlement with Allegheny Power Company in northern West Virginia in summer of 2010, the Company agreed to continue funding an 'Electric Efficiency Partnership' (EEP), with the same program design as the previous EEP, which ran from July 2007 thru June 2010, for \$250,000 per year. Thus currently through the GOEO and WVCAP weatherization delivery network, an Allegheny Power Company EEP, \$250,000 per year, is continuing. As a result of a negotiated settlement in 2009 for a new 500 kV transmission line that would be run through part of West Virginia, GOEO Weatherization Office, in partnership with Allegheny Power, agreed to a new "TrAILCo" (Trans-Allegheny Interstate Line Company) Electric Efficiency Partnership 'Plus' program. The TrAILCo EEP+ was designed to enhance the existing low-income Weatherization Assistance Program – Allegheny Power Electric Efficiency Partnership program by expanding comprehensive energy efficiency services to low-income Allegheny Power customers in the six county area that the TrAILCo transmission corridor passes through: North Central West Virginia Community Action Association: Monongalia-Preston-Tucker counties – and Eastern West Virginia Community Action Agency: Grant, Hardy, Hampshire counties. TrAILCo EEP+ participation was restricted to those low-income customers who qualified for DOE Weatherization and are customers of Allegheny Power in the six county high transmission line corridor, with an agreed five-year settlement of \$500,000 per year. Allegheny Power Company has also been in dialogue with the low-income weatherization network in its WV service area in early 2011 to discuss the possibility of new, focused, low-income Home Walk-Thru Audit and baseload program. A new program will be proposed to the Public Service Commission of West Virginia for review and approval. NOTE: as of February 25, 2011, Allegheny Energy and its subsidiaries, including TrAILCo, merged and became part of the FirstEnergy family of companies headquartered in Akron, Ohio. In West Virginia, FirstEnergy will re-establish the former "Potomac Edison" service area in the eastern panhandle, and the Monongalia Power (Mon Power) Company in the north-central service area of the state. From this point forward, the EEP, TrAILCo and any new programs will be FirstEnergy programs. II.7.2 DOE-Funded Leveraging West Virginia's Weatherization Program plans to continue to actively pursue non-Federal resources to supplement the Program, especially with post-ARRA funding reductions ahead, through the development of leveraging projects and partnerships and expects at least a dollar return for every dollar invested in it leveraging project activity. Weatherization leveraging activities in West Virginia's Weatherization Assistance Program since 2002 have consistently and successfully produced a greater number of dollars leveraged than expended every year. The Leveraging Program Specialist will continue to oversee leveraging activities. Planned activities will include the following objectives to increase the scope of weatherization services to low-income West Virginia households:

continued facilitation in the development of utility/WAP/legislative projects and partnerships, including representation as needed with activities in the West Virginia Legislature and Public Service Commission. Weatherization staff would



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## WEATHERIZATION ANNUAL FILE WORKSHEET (cont)

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continue to be involved in technical assistance, planning, and rules development of any negotiated projects or partnerships; expansion of some weatherization-utility partnership activity may be negotiated between the utility companies and the local weatherization providers;

continued facilitation of the expansion of subgrantee leveraging activities by:

assisting subgrantees and their statewide association (WVCAP) through the negotiation of partnerships, agreements, and other arrangements;

supporting expert advice on the development of such participation;

presentation of arguments and associated activities before state or local agencies, as contained under Section 142 of the Energy Policy Act of 1992; amended in 2005; and providing training and technical assistance support to WVCAP and subgrantees as part of their active participation in utility rate proceedings and process in West Virginia;

continue to provide support and leadership to subgrantees for a public information campaign (PIC) with subgrantees and their statewide association (WVCAP) - the PIC activities may include a component to provide tools and resources to local weatherization subgrantees to assist in weatherization outreach. The PIC will also include fall Energy Awareness activities - this support may include holding leveraging-related meetings, preparation of statewide weatherization statistical documents and technical briefs, and preparation of public information/energy efficiency data for use by local agencies; technical assistance in the organization of weatherization site demonstrations at the local agency level to illustrate program technology for policymakers.

It is anticipated that continued leveraging activities will enable the West Virginia Weatherization Assistance Program to enhance and expand comprehensive low-income weatherization services and be viewed as a leader in energy conservation technology and a viable partner in conservation projects. The program expects to continue receiving at least a dollar return for every dollar invested in its leveraging project.

## II.8 Policy Advisory Council Members (names, groups, agencies)

Byron Harris / Consumer Advocate, Consumer Advocate Division, PSC	
LeAnna Bickel / President, Coordinators Association Network	
Mary Chipps / Executive Director, WV Community Action Partnership	
Jim Norton / Retired Minister	
Vacant / XXX	

## II.9 State Plan Hearings (send notes, minutes, or transcript to the DOE office)

Hearing Date	Newspapers that publicized the hearings and the dates that the notice ran.
04/28/2011	The following newspapers ran ads on the Public Hearing. Bluefield Daily Telegraph Charleston Gazette Charleston Daily Mail Morgantown Dominion Post Huntington Herald Dispatch Martinsburg Journal Parkersburg News Wheeling Intelligencer

## II.10 Adjustments to On-File Information

Changes to the On-File Information include:

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## WEATHERIZATION ANNUAL FILE WORKSHEET (cont)

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**II.11 Miscellaneous****Historic Preservation**

As noted in DOE Weatherization Program Notice 10-012, DOE in coordination with the Advisory Council on Historic Preservation (ACHP) and the National Conference of State Historic Preservation Officers (NCSHPO), has developed a Prototype Programmatic Agreement to address historic preservation requirements for WAP. Our intention is to work very closely with our State SHPO office and will be able to utilize the Prototype PA to overcome the challenges before us while still meeting all guidelines of the Act as outline by NHPA. Our hope is to not only build a strong partnership that will prove advantageous to our respective organizations but also to the West Virginia families that we strive to serve. West Virginia's State Energy Program (SEP) Office has not been able to negotiate a SHPO Programmatic Agreement and consequently our state does not have an official DOE Historic Preservation PA. As a result, last summer our state Weatherization Program Office worked with WV SHPO to negotiate, draft and agree to a one year Letter of Understanding for Historic Preservation Section 106 review compliance for 2011 for weatherization activities. Our Program is now implementing Historic Preservation requirements with our subgrantees and putting review and reporting protocols in place.

**Policy Advisory Council**

The PAC typically meets once a year with periodic updates sent to members. The last meeting was on March 30, 2009. We are reorganizing this committee and working on having regular meetings. The State Policy Advisory Council (PAC) is being reorganized in 2011 to assist GOEO's Weatherization Assistance Program by advising state weatherization staff on issues and future directions of the program. The PAC members, by their leadership roles in the larger community, can bring value added outside perspective to the Program, and can also be an advocate with the general public about the Weatherization Assistance Program, low-income energy needs, and energy efficiency. In turn, the PAC will advise WAP staff on policy, based on their knowledge, perspective, and sensitivity to their particular constituency. The PAC will tentatively meet once or twice a year as needed to discuss pertinent issues and recommend broad policy implementation to insure an efficient Program. Some PAC meetings may utilize conference call or Go To Meeting technology. Periodic information updates will be made to inform members of program status and development. E-mail exchanges will also be used when possible to update members and discuss relevant business, hopefully making communications more convenient and more efficient for all involved.

**U.S. Department of Energy**  
**STATE PLAN/MASTER FILE WORKSHEET**

Identification Number: EE0000085, State: WV, Program Year: 2011

This worksheet should be completed as specified in Section III of the Weatherization Assistance Program  
Application Package.

**III.1 Eligible Population**

**III.1.1 General Description**

**Definition of income used to determine eligibility:**

Starting on April 1, 2009, the West Virginia Weatherization Assistance Program BEGAN TO (will) use 200% of the Federal Poverty Level as the guideline for determining qualification for the program. The decision as to whether or not a dwelling unit is eligible will be based on the amount of household income and the conformity of that income to criteria established by the Low-Income Home Energy Assistance Act of 1981, 42 U.S.C. 8621. All subgrantees in the West Virginia Weatherization Assistance Program will use 200% of the OMB Poverty guidelines for determining income eligibility. Also, family units that have received cash assistance payments under Title IV or XVI of the Social Security Act or applicable State or local law paid during the twelve-month period preceding application will be eligible for weatherization pursuant to 10 CFR part 440.22. Low-income members of an Indian tribe will receive benefits equivalent to the assistance provided to other low-income persons within the state. There are two information items, which were cleared through OMB and Privacy Act procedures. However, this information must be separately collected at the subgrantee level using State/Federal mandated forms per dwelling unit. Information is required on the following:

total annual income; and  
whether the applicant has received cash assistance payments under Title IV or XVI of the Social Security Act during the preceding twelve months

**Procedures to determine that units weatherized have eligibility documentation:**

The State has established an application process containing information that must be obtained from prospective program participants before a decision can be made on their eligibility for weatherization assistance. Individual projects must include all of the items as outlined in the state process as mandatory data fields in the State application process where applicable. All prospective applicants will be required to identify and provide verification of the amount and source of all their income for their household. Additional data fields as included in the state required software information system will require the collection and reporting of household demographic and residence specific information including but not limited to whether they rent or own their home. All applicants will be required to sign their application, testifying to the correctness of their statements. Falsification of an application is subject to prosecution.

Definition of children: Below age 19

Recommend tribal organization(s) be treated as local applicant? Yes

If YES, Recommendation: If NO, statement that assistance to low-income tribe members and other low-income persons is equal:

Low-income members of an Indian tribe will receive benefits equivalent to the assistance provided to other low-income persons within the state.

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### STATE PLAN/MASTER FILE WORKSHEET (continued)

Identification Number: EE0000085, State: WV, Program Year: 2011

#### III.1.2 Selection of Areas to Be Served

Traditionally, the method used to select each area to be served by a weatherization project has been as follows: 1. The community action agencies in the State would operate the Weatherization Assistance Program in the counties where they have traditionally operated community action programs. 2. Community action agencies would be permitted to take the Weatherization Assistance Program into unserved counties, if it is feasible for them to do so. 3. Non-profit groups in areas of the State unserved by the Weatherization Assistance Program would be permitted to operate the program in their area, if they possessed the willingness and capacity to do so. 4. Selection of weatherization subgrantees was made pursuant to Federal Regulation 440.15. 5. In the event that the Governor's Office of Economic Opportunity determines that a subgrantee fails to meet contractual requirements, options are but not limited to: • Funds can be moved to an eligible agency. The preferred method is to continue services to the affected service area, however, it may be necessary to allocate the funds to other agencies in the state for the state to meet the grant requirements. • The state may seek other qualified entities to provide weatherization services.

#### III.1.3 Priorities

The State will give priority to identifying and providing weatherization assistance to the elderly and disabled low-income persons. A target of 50% of the eligible dwelling units served will be those in which the elderly (age 60 and over) reside, and a target of 25% of the eligible dwelling units served will be those in which the disabled reside. Each subgrantee has been assigned a minimum number of the aforementioned dwelling units that is targeted to be weatherized. The State is also exploring means of identifying and targeting high end energy users and high energy burden clients as priority groups. The State is also developing a point system to rank clients in the client tracking and reporting database system, to assist in identifying and providing assistance to these groups. The publicity surrounding this program will emphasize that priority is to be given to eligible dwelling units in which the elderly and disabled reside. The program will rely heavily on the West Virginia Commission on Aging and the West Virginia Department of Health and Human Resources for assistance in identifying eligible program participants. At the discretion of the subgrantees and their local Policy Advisory Committees (PAC), other units can be considered for prioritizing, after the needs of the elderly and disabled have been met. Numerous factors will be considered, such as children (age 19 or less), leveraging of other funds, and condition and potential energy savings of the dwelling unit. The intent will be to conserve the maximum amount of energy possible.

#### III.2 Climatic Conditions

SOUTHWESTERN DIVISION: Jackson, Mason, Putnam, Kanawha, Roane, Clay, Boone, Logan, Mingo, Wayne, Cabell, and Lincoln Counties

MONTHTEMPERATURE NORMS (Fahrenheit) PRECIPITATION (inches/month)

January27.400.93

February34.603.92

March40.802.27

April58.503.91

May60.304.59

June72.905.64

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STATE PLAN/MASTER FILE WORKSHEET (continued)

Identification Number: EE0000085, State: WV, Program Year: 2011

July 75.104.09  
August 72.301.45  
September 65.302.86  
October 53.802.61  
November 44.701.45  
December 33.302.67

CENTRAL DIVISION: Raleigh, Nicholas, Webster, Fayette, Pocahontas,  
Tucker, and Randolph Counties

MONTH TEMPERATURE NORMS (Fahrenheit) PRECIPITATION (inches/month)

January 21.401.40  
February 31.203.31  
March 33.703.47  
April 52.404.67  
May 55.306.27  
June 66.307.40  
July 68.405.06  
August 65.602.31  
September 59.605.04  
October 48.104.19  
November 48.901.62  
December 27.003.97

NORTH CENTRAL DIVISION: Monongalia, Braxton, Calhoun, Gilmer, Lewis,  
Harrison, Barbour, Doddridge, Marion, and Taylor Counties

MONTH TEMPERATURE NORMS (Fahrenheit) PRECIPITATION (inches/month)

January 23.201.17  
February 32.604.63  
March 37.602.63  
April 55.104.13  
May 58.306.09  
June 69.908.36

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July 72.404.71  
August 69.601.81  
September 63.104.04  
October 51.103.64  
November 40.801.64  
December 30.802.82

SOUTHERN DIVISION: Greenbrier, Summers, Monroe, McDowell, Mercer,  
and Wyoming Counties

MONTH TEMPERATURE NORMS (Fahrenheit) PRECIPITATION (inches/month)

January 27.400.86  
February 34.602.73  
March 37.902.34  
April 57.003.60  
May 58.805.88  
June 70.504.72  
July 72.704.31  
August 69.301.54  
September 63.203.63  
October 51.803.06  
November 43.001.19  
December 31.002.89

NORTHEASTERN DIVISION: Grant, Hardy, Pendleton, Berkeley, Jefferson,  
Morgan, Hampshire, Preston, and Mineral Counties

MONTH TEMPERATURE NORMS (Fahrenheit) PRECIPITATION (inches/month)

January 25.800.44  
February 35.202.93  
March 38.901.03  
April 55.402.88  
May 59.004.29

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June 70.404.66  
July 72.104.09  
August 69.401.54  
September 64.203.76  
October 50.303.68  
November 42.800.84  
December 31.201.46

NORTHWESTERN DIVISION: Hancock, Brooke, Ohio, Marshall, Wetzel, Tyler,  
Pleasants, Wood, Ritchie, and Wirt Counties

MONTH TEMPERATURE NORMS (Fahrenheit) PRECIPITATION (inches/month)

January 24.90 0.73  
February 33.704.29  
March 39.101.86  
April 55.904.89  
May 59.40 4.36  
June 70.707.64  
July 73.30 4.42  
August 70.901.57  
September 64.10 3.65  
October 52.302.09  
November 42.601.38  
December 31.802.21

III.3 Weatherization Work

III.3.1 Type of Work to Be Done

The work to be performed on client's homes is determined by the following priority lists:

*A. Priority List for Site-Built Homes*

**General Measures**  
**Detailed Measures**  
1. Heating System Clean and Tune • Mandatory measure (unless system is being replaced). • Include health and safety tests.  
2. Air Sealing • Mandatory measures. • Use blower door to guide air sealing. • Ducts must be sealed as per blower door guided and duct diagnostic standards. Seal ducts only if they are outside thermal envelope. • Home must be sealed at least to upper limit of the target range and any other significant or obvious air leaks. • Seal all major bypasses and key junctures. • Attics/ceilings must be sealed prior to installation of attic insulation.  
3. Duct Insulation • Mandatory measure. • After

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sealing ducts outside the thermal envelope, insulate the same ducts.4. Attic Insulation• Mandatory measure: Insulate attics to R-38 if existing insulation is less than R-11. • If there is even and consistent existing R-11 to R-19, attic insulation, go to priority #6, and priorities #5 and #6 move up to #4 and #5. • If existing is consistent R-11, attic insulation to R-38 is a recommended measure. • If existing is consistent R-19, attic insulation to R-38 is allowable. • Mandatory measure: Insulate knee walls to maximum structurally allowable. Seal applicable key junctures in knee wall areas. 5. Sidewall Insulation• Mandatory Measure: Dense pack wall cavities to R-13 or maximum structurally allowable.6. Floor Insulation• Mandatory measure if there is an open foundation and no existing insulation. • Recommended Measure otherwise. • Insulate floors that define heating envelope to R-19 (if none existing).7. Heating System Replacement• Case-by-case consideration. • SIR is greater than 1 if SSE of existing unit is 76% or less. • Cannot be justified on basis of cost effectiveness over higher priority measures. • Can be installed after higher priority measures if agency deems it affordable or utility program pays. • Must replace with 90+ high efficiency forced-air unit or highest efficiency possible direct vent space heater.**Baseload Measures**• Water Heater Insulation• Mandatory measure. • Insulate tanks with less than R-11 existing insulation (unless added insulation will void manufacturer's warranty).• Refrigerator Replacement• Mandatory measure for DOE/DHHR if SIR is equal to or greater than 2. • Mandatory measure if paid by electric utility EEP and SIR greater than 1.5 • Optional measure if affordable for DOE/DHHR if SIR greater than 1. • CFLs• Mandatory measure using electric utility EEP funds if bulb is on more than 2 hours per day. • Shower Heads• Mandatory measure if paid by electric utility EEP and existing flow is greater than 3 gallons per minute. **Health and Safety** • Heating System Replacement• Case-by-case analysis. • Heating systems with non-repairable health and safety hazards can be replaced if warranted. Utility funds will pay for new system in some cases. • Water Heater Replacement• Case-by-case analysis. • Non-repairable gas and electric water heaters can be replaced if warranted and funds allow. Utility funds will assist in payment in some cases. • Actively leaking water heaters can be replaced. • Any replacement should be with highest efficiency or energy factor available and practical. • Combustion Appliance Measures• Mandatory testing and documentation of tests on HURMS. • Eliminate hazards that pose imminent danger to health and safety of occupants. • Mechanical Ventilation• Mandatory when the dwelling is tighter than the BTL. • Install properly sized mechanical ventilation when needed to insure indoor air quality.**Repair Measures**If repair materials are greater than \$250 of DOE/DHHR funds, NEAT must be run to show cumulative SIR is greater than 1. • Replacement Doors and Windows• Individual NEAT must be run to show measure SIR is greater than 1. • Door and window replacement can not be done in lieu of any



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mandatory measures. **Notes**

- All mandatory measures are underlined.
- General Measures are listed in order of priority based on SIR.
- Other measures (baseload, health and safety, repairs) are not listed in order of priority.
- All mandatory measures have SIRs greater than 4 and are expected to be done on all jobs. Thorough documentation must be provided if a mandatory measure is not performed.
- Recommended measures should be performed unless they are cost prohibitive. The reason for not performing the measure must be documented.
- Allowable measures or case-by-case measures are at the discretion of the agency and should be based on costs and professional opinion. They cannot supplant mandatory measures without individual NEAT being run to justify.
- Any variation from the priority list must be based on individual NEAT analysis.

***B. Priority List for Mobile Homes***

**General Measures**  
**Detailed Measures**  
1. Heating System Clean and Tune\* • Mandatory measure (unless system is being replaced). • Includes health and safety tests.  
2. Air Sealing • Mandatory measure. • Use blower door to guide air sealing. • Ducts must be sealed according to blower door guided and duct diagnostic standards. • Home must be sealed at least to upper limit of the target range and any other significant or obvious air leaks.  
3. Ceiling Insulation for pre-1976 Mobile Home • Mandatory measure if existing insulation is less than 3 inches or if existing insulation has light spots or voids (flat or bow string roof). • Recommended measure if existing insulation is 3 inches and there is 8 inch bow string roof. • Not cost effective if there is 3 inches existing insulation without voids and there is a 6 inch or less bow string roof.  
3. Ceiling Insulation for 1976-1994 Mobile Home • Mandatory measure if existing insulation is less than R-11 or if existing insulation has light spots or voids (nat. gas and electric). • Mandatory measure with oil or propane heat (regardless of existing R-value). • Recommended measure if existing insulation is R-11 and there is at least an 8 inch bow (in center) string roof (nat. gas and electric). • Not cost effective if there is R-11 existing insulation without voids and there is a bow string roof with a center of 6 inch or less (nat. gas and electric).  
4. Floor Insulation for post-1994 Mobile Home • Mandatory Measure when there is R-11 existing insulation or less or insulation with voids. • Not cost effective on floors with existing R-19 insulation.  
4. Floor Insulation for pre-1994 Mobile Home • Mandatory measure when there is a rounded (sag) belly. • Mandatory measure on flat belly with 3.5 inch cavity if existing insulation is less than 3 inches or if existing insulation has light spots or voids. • Not cost effective with 3.5 inch flat belly with 3 inches existing insulation with no voids.  
Ceiling Insulation for post- 1994 Mobile Home • Recommended measure if less

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than consistent R19 or if voids, but should not be the case because of HUD manufacturing mandates. Heating System Replacement• Can be installed after higher priority measures, if agency deems it affordable and/or utility program pays. • If replacing, must replace with 90+ high efficiency forced air unit or highest efficiency possible for direct vent space heater. **Baseload Measures**• Water Heater Insulation• Mandatory measure on tanks with less than R-11 existing insulation (unless added insulation will void manufacturer's warranty).• Refrigerator Replacement• Mandatory measure for DOE/DHHR if SIR is equal to or greater than 2. • Mandatory measure if paid by electric utility EEP and SIR greater than 1.5. • Optional measure if affordable for DOE/DHHR if SIR greater than 1. • CFLs• Mandatory measure if paid by electric utility EEP and bulb is on more than 2 hours per day. • Shower Heads• Mandatory measure if paid by electric utility EEP and existing flow is greater than 3 gallons per minute. • Optional measure if affordable for DOE/DHHR and existing flow is greater than 3 gallons per minute. **Health and Safety Measures**• Heating System Replacement• Case-by case analysis. • Heating systems with non-repairable health and safety hazards can be replaced if warranted. Utility funds will pay for new system in some cases. • Water Heater Replacement• Case-by case analysis. • Non-repairable gas and electric water heaters can be replaced if warranted and funds allow. Utility funds will assist in payment in some cases. • Actively leaking water heaters can be replaced. • Any replacement should be with highest efficiency or energy factor available and practical. • Combustion Appliance Measures• Mandatory testing and documentation of tests. • Eliminate hazards that pose imminent danger to health and safety of occupants. • Mechanical Ventilation• Mandatory when the dwelling is tighter than the BTL. • Install properly sized mechanical ventilation when needed to insure indoor air quality. **Repair Measures** If repair materials are greater than \$250 of DOE/DHHR funds, MHEA must be run to show cumulative SIR is greater than 1. • Heating System Replacement• Electric furnace can be replaced if beyond reasonable repair using electric utility EEP funds. • Combustion furnace replacements are allowable to replace if repairs are not feasible or repairs cost more than 2/3 the cost of a replacement. (Not subject to individual MHEA run when over \$300.) • Replacement Doors and Windows• Jalousie windows can be replaced when not repairable and when there is significant air leakage discovered by blower door tests. • Door and window replacement cannot be done in lieu of any mandatory measures. **Notes**

- All MHEA test runs called for clean and tune rather than replacement.
- All mandatory measures are underlined.
- Under "General Measures" some of the items are specific to the year the mobile home was manufactures.

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- General measures numbers 1 - 4 are listed in order of priority based on SIR.
- Other Measures (baseload, health and safety, repairs) are not listed in order of priority.
- All mandatory measures are expected to be done on all jobs. Thorough documentation must be provided if a mandatory measure is not performed.
- Recommended measures should be performed unless they are cost prohibitive. The reason for not performing the measure must be documented.
- Allowable measures or case-by-case measures are at the discretion of the agency and should be based on costs and professional opinion. They cannot supplant mandatory measures without individual NEAT being run to justify.
- Any variation from the priority list must be based on individual MHEA analysis.

**III.3.2 Energy Audit Procedures**

As allowed by DOE regulations, the West Virginia Weatherization Assistance Program utilizes priority lists for comparable dwelling units that do not have unusual energy-consuming characteristics. The priority lists were developed by conducting site-specific energy audits of a representative group of comparable dwelling units.

These priority lists will be periodically developed by the West Virginia GOEO, submitted to DOE for approval, and then distributed to the agencies. At the time of this application, West Virginia has submitted to DOE an updated priority list and is waiting for approval.

WWWAP uses the Weatherization Assistant software as its energy audit tool. The Weatherization Assistant energy audit software was developed by Oak Ridge National Laboratory specifically for the use for the Weatherization Assistance Program. There are two components to the Weatherization Assistant software: the National Energy Audit Tool (NEAT) for single family houses and the Manufactured Home Energy Audit (MHEA) for mobile homes.

The use of NEAT or MHEA are required when an agency thinks needed measures for a particular house vary significantly from a priority list. NEAT and MHEA should also be used to analyze refrigerator replacements and to perform heating system replacement sizing calculations.

At least one person at each agency shall have good working knowledge of NEAT and MHEA.

The Weatherization Field Standards outline usual guidelines for proceeding with common weatherization measures, and establishes standards for installations. The Field Guide is more of a "how to" reference guide and is used as an in-field reference guide for program supervisors and technicians. Together, the Field Standards and Field Guide create a logical and practical means of addressing the energy conservation needs of the State's dwelling units.

The impetus of the program is toward providing the best energy paybacks for the dollars invested. This might mean spending a relatively small amount on some houses, if other measures will not be cost beneficial. With the confines of the maximum cost averages, it is better to "save" funds for those homes that will truly benefit by more measures than trying to spend up to the limit on each home. This reinforces the idea of each dwelling being a unique unit with its own particular energy saving needs.

This approach to weatherization is accordant with blower door usage. The blower door is a tool that facilitates decisions on which measures will be effective on each individual dwelling unit. At least a pre-weatherization and a post-weatherization blower door test will be performed on each dwelling unit.

The airflow, expressed in CFM50, will be recorded in the Work Plan of each client file.

Blower door procedures, guidelines, and installation standards are in the Weatherization Field Standards.

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These standards include a target range for air sealing. The lower range number defines the minimum ventilation rate for the given home. No home will be tightened more than this MVR, to diminish the risk of indoor air quality and/or moisture problems. The upper range number defines for a crew supervisor how much air sealing should be done before subsequent priorities will be addressed. West Virginia is going to train toward the adopting of the ANSI/ASHRAE Standard 62.2-2010 as required by January 1, 2012.

Since NEAT does not calculate the savings to investment ratio of measures within the general heat waste (infiltration) category, the following guidelines for prioritizing air leakage measures were established.

Measures are generally performed in the following order until the minimum ventilation rate has been reached, or until it is no longer cost beneficial to install additional materials:

air leaks are to be sealed from the largest openings first and working down to the smallest leaks;

seal all large openings in the envelope (e.g., holes in walls, floors or ceilings, missing sheetrock, missing or broken glass, missing windows, etc.);

measure and seal all duct leaks, both supply and return lines, using the digital duct manometer and pressure pan;

seal large thermal bypasses (chimney chases, balloon walls, plumbing and electrical chaseways, etc.).

Insure all attic sealing is done;

install attic insulation;

install dense pack sidewall insulation;

assess the status of air sealing work. Continue sealing if upper limit of the target range has not been reached, or if the minimum ventilation rate has not been reached and it is cost effective; and

continue air sealing with secondary measures such as caulk, weather-stripping, etc. as detected by the blower door.

Attic and wall insulation, measures highly prioritized by NEAT, have proven to have a significant effect on air sealing and CFM rates. Therefore, they are installed with other air leakage measures in order to lessen the possibility of sealing the home below the minimum ventilation rate.

Unit Types

Audit Procedures and Dates Most Recently Approved by DOE

Single-family

NEAT, 2002

**III.3.3 Final Inspection**

Subgrantees are required to perform a final inspection of each dwelling unit before it can be reported as a completion. The final inspection must be performed by a State certified Post Work Inspector. Except in extreme circumstances, this person will not have worked on the unit.

During the State Weatherization staff's regular monitoring visits of the subgrantees, a random sample of the client files is reviewed for post work certifications. Each certification is examined to ensure that the post work inspection was performed by an individual other than the one who performed the original work, when possible.

During the monitoring, approximately 10% of completed jobs are inspected to thoroughly evaluate a sampling of work quality, work orders, and post work inspections. In addition, all summary sheets, subgrantee reports outlining measures on each completed job, will be reviewed and entered into a statewide database.

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**III.3.4 Assessment of Effectiveness**

Program production, goal attainment, and expenditure rates are tracked on a monthly basis for each subgrantee at the State level. These factors are analyzed quarterly, and the appropriate technical assistance is provided to those agencies not meeting their goals. The subgrantee agencies use the same spreadsheet for tracking their own production and expenditures to further ensure timely evaluation of local programs and reevaluation of goals when necessary.

An integrated software program for desktop monitoring will be utilized and incorporated into a statewide database. The review process also serves as an initial monitoring to check that prioritized measures were done according to program standards, and that diagnostic and health and safety tests were performed satisfactorily. Some jobs are tagged for field monitoring visits if there are unanswered questions from the desktop monitoring.

**III.4 Health and Safety**

See attachment.

**III.5 Rental Procedures**

Up to 25% of the eligible dwelling units served are targeted to be rentals. This is based on census data for the percentage of low-income renters in West Virginia. Multiple dwelling units can be weatherized if 66% (50% for duplexes and quadraplexes) of the occupants qualify for weatherization assistance pursuant to Federal Regulation 440.22; however, no rented dwelling unit can be weatherized without first obtaining the written permission of the owner of the dwelling unit or agent. Completion of the Owner Agreement of Rental Homes form will be mandatory for rental units.

The form is designed to assure the following:

that the benefits of weatherization assistance shall accrue primarily to low income tenants;

that rents shall not be raised because of the increased value of dwelling unit(s) due solely to weatherization assistance provided under this program;

that no undue or excessive enhancement shall occur to the value of the dwelling unit; and

that the landlord understands the requirements set forth by the Financial Participation Policy for Rental Units.

Job No. \_\_\_\_\_

WEST VIRGINIA WEATHERIZATION ASSISTANCE PROGRAM  
OWNER AGREEMENT

I \_\_\_\_\_ owner/agent of the dwelling unit located at

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\_\_\_\_\_ and presently occupied by  
\_\_\_\_\_ hereby give my consent to having said dwelling  
unit weatherized by \_\_\_\_\_.

I further agree that for a period of two years, the rent shall not be raised because of the increased value of the dwelling unit due solely to the weatherization, unless those increases are demonstrably related to matters other than the weatherization work. I understand that in the event of a rent increase, the agency can request justification of such increase and could seek remuneration of the increase. In cases where the cost of heating or cooling the dwelling unit is included in the rent, I further agree that any significant reduction in such costs will be passed on to the occupant in the form of reduced rents.

It is understood that West Virginia's Weatherization Assistance Program (WAP) policy requires this agency to obtain investments from the owner to supplement the weatherization energy conservation services to be performed on the building. The policy states that:

1. If an owner of the dwelling unit qualifies for WAP, no landlord contribution is expected.
2. If an owner pays heating costs for a rental unit, a mandatory landlord contribution of 15% of the total cost of weatherization is expected.
3. On units where health and safety abatement work needs to be done to a heating system or any combustion appliance, the landlord will be notified and required to contribute a mandatory 50% of the cost of health and safety work, or the work will not be done. (The landlord is also still expected to contribute 25% of the cost of the remaining weatherization work.)
4. In all other situations, landlords are expected to contribute 25% of the total cost of weatherization to the subgrantee performing the work.

It is further understood that the agency and the weatherization program cannot be held liable for existing program-identified health and safety violations that are not corrected by the agency. It is also understood that the work to be done shall consist of weatherization activities only, as defined by WAP priorities and standards, and that no undue enhancement shall accrue to the value of the dwelling.

A Program Description has been given to me explaining measures typically performed by the Weatherization Assistance Program. Included in this informational packet is a sample Owner Investment Form illustrating a typical synopsis of the audit/estimate and the owner's projected investment. Also included is a sample invoice based on actual work performed.

An energy audit/cost estimate of needed weatherization work will be made and supplied to me on the Owner Investment Form. I will review this form, and upon agreement, will sign so that work can begin. Upon completion of the agreed work, an invoice will be sent to me reflecting the work completed and my costs based on the above-mentioned policy. In the event that costs exceed those estimated, the additional costs will be explained to me and those additional costs negotiated.

Signature of Owner \_\_\_\_\_ Date \_\_\_\_\_

Address \_\_\_\_\_

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Phone Number \_\_\_\_\_ Rev. 3/96

**FINANCIAL PARTICIPATION POLICY FOR RENTAL UNITS**

The West Virginia WAP implemented a landlord financial participation policy in 1993.

1. If an owner of the dwelling unit (hence landlord) qualifies for weatherization assistance then no landlord contribution is required.
2. Landlords are required to contribute 25% of the total cost of weatherization to the subgrantee performing the work. A breakdown of these costs will be included on the Owner Investment Form: Estimate. The owner's signature must be witnessed by someone other than the tenant. It is recommended that the owner's signature be notarized.
3. In all cases, a written agreement acknowledging the existence of these requirements must be included in accordance with the rent release agreement between the landlord and the subgrantee.
4. On units where health and safety abatement work, repairs, or replacement needs to be done to a heating system or any combustion appliance, the landlord will be notified and required to contribute a mandatory 50% of the cost of all heating system work, or the work will not be done. (The landlord is also still required to contribute 25% of the cost of the remaining weatherization work.)
5. When health and safety problems are identified and the owner does not want to participate or sign the agreement forms, the subgrantee will send a letter by registered mail to the owner and client. The letter will apprise the owner and client of the existing health and safety problems, and identify the owner's responsibility for rectifying the situation. A copy should also be sent to any other appropriate body, such as the Gas Company, housing authority, etc. The letter can give the owner the option of fixing the identified problem within a certain period of time and then notifying the subgrantee so weatherization work can resume.
6. Subgrantees will be required to submit a completed cost form to the landlord upon the completion inspection and sign off of the work. A copy of this form will become a part of the permanent file.
7. The use of these contributed funds must be for reasonable weatherization related activities under the budget's material, program support, and personnel line items. All landlord funds are considered leveraged funds and will be tracked and reported on the monthly Non-GOEO Expenditure reporting form to the State.
8. In special cases, the subgrantee maintains the right to find exception with this policy when client needs or landlord circumstances justify. The subgrantee's Weatherization Committee should be involved in developing and monitoring a local landlord contribution policy to be kept on file.

**III.6 Program Management**

**III.6.1 Overview**

The West Virginia Weatherization Assistance Program is administered by the Governor's Office of Economic Opportunity (GOEO). The GOEO also administers the Community Services Block Grant (CSBG), Emergency

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Shelters Grant, Housing Opportunities for Persons with AIDS (HOPWA), Low-Income Home Energy Assistance Program (LIHEAP) (Application Intake).

**III.6.2 Administrative Expenditure Limits**

The State will retain 4% of the grant for their administrative costs and 6% will be made available to program subgrantees. When possible, an additional 5% is generally made available to program subgrantees receiving less than \$350,000 DOE funds. This is based on subgrantees showing need for the extra costs. Such justification would include a smaller percentage of Administrative funds from other funding sources.

A separate budget category is permitted by DOE for financial audits. The cost of these audits was previously charged to the already over-burdened administrative cost category and sometimes resulted in less than adequate, quality financial audits. WV GOEO is providing some relief to the subgrantees by allowing these charges to come off the top of the grant, if the subgrantees meet the threshold contained in A-133.

**III.6.3 Monitoring Approach**

**Monitoring Procedures Overview**

**Introduction**

The monitoring procedures overview is designed to provide guidelines for the Governor's Office of Economic Opportunity Weatherization staff and subgrantee agencies regarding the monitoring and evaluation of local Weatherization Assistance Program subgrantees. Monitoring takes place while the program is in operation and provides oversight for the services being delivered at the local level. Monitoring ensures that accountability exists for program resources and provides information that can be used to improve the program's operation and services.

*Goals of Monitoring*

Assess strengths and weaknesses of all aspects of the local program.  
Analyze whether best possible program services are being delivered to the low-income population.  
Determine program compliance and accountability.  
Identify weaknesses of local agencies.  
Advise agencies on how to correct the deficiencies.  
Assist agencies in their program operations and compliance with DOE and State regulations.  
Be a major tool for program improvement.  
Assess the need for training and technical assistance to improve local agency service delivery, cost-effectiveness, and accountability.

*Guiding Principles*

Monitoring is intended to be a constructive process and will be conducted in a professional manner with consistency, fairness, respect, and timeliness.

The GOEO WAP staff is committed to fostering positive, open, and constructive working relationships. Monitoring serves as a two-way educational experience that promotes interaction, feedback, and improvements to both the state



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and local components of the Weatherization Network.

The GOEO WAP staff believes GOEO and local Weatherization staff share the same goals of striving for program improvement and providing the most cost-effective and best quality program services possible.

The GOEO WAP staff will promote improvement when monitoring by providing technical assistance, reinforcing strengths, and sharing successes, innovations, good practices, and experiences encountered at other agencies.

Monitoring reports will be consistent with, and based on, adopted program policies, procedures, and standards.

To achieve the defined goals, and based on the guiding principles, GOEO staff will perform periodic monitoring reviews of the fiscal, programmatic, and field functions of local Weatherization agencies.

*Desktop Reviews*

The GOEO Fiscal Monitor will review and track annual subgrantee agency audits for timeliness, audit findings, and resolution of findings.

Weatherization staff will review agency Monthly Progress Reports and track agency production and expenditures on a monthly basis on the Statistical Production and Expenditures Tracking spreadsheet. In addition to being maintained by GOEO, this file is required to be maintained by each agency. The file will track production and expenditures and determine correct funding request amounts. The evaluation sections will analyze key program compliance criteria, including average costs per completion for each classification of completed dwelling unit, percentage of production goals achieved, percentage of grant and each line item expended, and health and safety expenditures.

An integrated software program for desktop monitoring is being developed and will be utilized and incorporated into a statewide database. The review process also serves as an initial monitoring to check that prioritized measures were done according to program standards, and that diagnostic and health and safety tests were performed satisfactorily.

Some jobs are tagged for field monitoring visits if there are unanswered questions from the desktop monitoring.

*Subgrantee Agency Monitoring Visits*

1. Fiscal Monitoring will typically occur once per year per local agency. The fiscal monitoring will be conducted by the GOEO Fiscal Monitor. During the visit, the fiscal monitor will review all the fiscal operations of all GOEO programs being administered by the local agencies. Functions of the fiscal monitoring will include:

Review financial records

Review purchasing and bidding practices

Review payroll and documentation

Review travel records

Review vendor payments

Assist with potential audit problems

Review last fiscal audit (usually performed at GOEO, not during agency visit)

2. Program Management Monitoring will typically occur once per year per local agency. Program Management monitoring will be conducted by GOEO Weatherization Program Specialists and will be program specific to the

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Weatherization Assistance Program. The Program Management Monitoring Form will be the base tool used to perform this evaluation. Functions of the Program Management Monitoring will include:

- Review client files
- Review production, expenditures, and related compliance issues
- Review material, tool, equipment, and vehicle property records and inventory
- Review client flow charts and scheduling practices
- Review crew safety policies and practices
- Review insurance policies
- Inspect warehouse and vehicles

3. Field Monitoring will typically occur twice per year per local agency. Agencies demonstrating very good quality field work may only be monitored once. Field monitoring will be conducted by GOEO Weatherization Program Specialists, usually utilizing a team approach of two or more monitors. When using a monitoring team, one Program Specialist will be designated as Team Leader. The Team Leader will organize activities, assign tasks, schedule and conduct the exit conference, and submit the report.

Individual job inspections will be performed and documented on the Field Inspection Report. Jobs will be inspected for overall effectiveness, workmanship, appearance, and compliance with installation standards. An overall assessment of agency field practices will be performed using the Agency Field Assessment Overview. This tool will rank agency field practices in 11 different field evaluation criteria, and identify major strengths, major field findings, and trends for concern.

Major strengths are areas where the agency field staff performs at a high level, including overall high effectiveness and workmanship, strengths in certain measures, crew organization and utilization, and teamwork.

Major field findings are issues that are of significant concern and/or contract violation, such as major health and safety problems, potential liability from poor workmanship, consistent omission of required measures, or consistently failing to follow program rules, standards, or specifications.

Trends for concern are recurring issues that may be of secondary concern, such as consistent small file omissions (no date on form), procedural items that can be quickly or easily corrected, or a finding in work quality that is easily correctable and does not significantly impact on the overall results of work performed to achieve energy efficiency for the client (for example, failure to wrap the first five feet of water pipe from the water heater).

*Monitoring Procedures*

Monitoring visits will be scheduled in advance with the agency. Fiscal Monitoring visits will be arranged and scheduled by the GOEO Fiscal Monitor. Typically, Program Management Monitoring and Field Monitoring will be scheduled by GOEO Weatherization staff. The Weatherization Administrator will send a memorandum with the monitoring schedule. Subgrantee agencies will be given a period of time to inform the Administrator if there are overriding conflicts with the scheduled dates for the agency, and new monitoring dates will be established.

Upon arrival at the agency, the Monitor(s) will meet with appropriate agency personnel to explain the purpose of the

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visit, records and information needed, and the planned timeframe of the visit. An exit conference will be tentatively scheduled with the Executive Director and Weatherization Coordinator. The Weatherization Coordinator must be available at all times during a monitoring visit at the discretion of the GOEO Monitor(s).

At the conclusion of the monitoring visit, an exit conference will be conducted to review the monitoring analysis with the Executive Director and Weatherization Coordinator, and other personnel as deemed appropriate. The Monitor(s) will provide the agency with a draft outline of concerns and findings observed during the visit. The Monitor(s) will answer any questions to help ensure that the agency understands the content of the draft report.

Every effort will be made to complete and mail a final monitoring report to the Executive Director and Weatherization Coordinator within 14 days of the monitoring visit. The agency will be given 30 days to respond to the recommendations and/or findings noted in the report. GOEO will review the response and determine if the actions described are appropriate and sufficient. GOEO may schedule a follow-up visit to verify agency actions or to further analyze unresolved matters.

*Local Agency Monitoring Responsibilities*

Local agencies are required to inspect 100% of all completed units to determine compliance with Weatherization Assistance Program quality standards and to ensure proper documentation of client information, job measures and costs, and other appropriate information as needed. Inspections must be performed by certified Post-Work Inspectors who, except in rare cases, did not perform the actual work on the job. The thoroughness and effectiveness of agency inspections will be an important evaluation criteria to be assessed during the GOEO Field Monitoring visits.

*Agency Discipline Policy*

An agency can be placed on At-Risk status for serious management and/or consistent sub-standard field performance, including but not limited to:

Program goals are not being met;  
Program resources cannot be accounted for;  
Serious indications of the following:  
misuse of funds;  
fraud, waste or abuse; or  
theft;  
Agency not in compliance with program policies and procedures;  
Agency files and records severely incomplete or disorganized;  
Repeated major field findings with no or minimal improvement from previous monitoring visit;  
Significant number of "Unacceptable" rankings in Agency Field Assessment Overview; and  
The agency's failure to respond to GOEO requests and deadlines.

When placing an agency on At-Risk status, GOEO will specify improvements that must be made by the agency. The agency will be instructed to submit a plan to identify the steps and timelines to be taken to make the noted

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### STATE PLAN/MASTER FILE WORKSHEET (continued)

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improvements. When appropriate, related training and technical assistance will be provided. GOEO will consider suspension or termination of the Weatherization contract unless the specified guidelines and performance standards are met as outlined in the GOEO Weatherization contract and Weatherization Field Standards. These corrections must be accomplished by the agency at risk in a specified period of time, as set by the GOEO Monitoring Assessment Team.

#### III.6.4 Training and Technical Assistance Approach

The WVWAP will continue to utilize the traditional approaches of on location prescriptive administrative and in-field training and technical assistance based on monitoring findings at particular subgrantees. However, with the funding opportunities presented by ARRA, DOE Training and Technical Assistance initiatives and the awarding of the Weatherization Training Center Grant, the WVWAP has been able to expand Training and Technical Assistance efforts by utilizing:

The DOE Standardized Training Curriculum to provide a more comprehensive training program to new and existing weatherization program personnel;

Funding to develop a tailored, accredited technical curriculum to be provided through the WV Community and Technical College system (WVCTC) that will enable subgrantees to access training and technical materials on site and online at their local WVCTC sites within the state; and

The Weatherization Training Center facilities and resources at the New River CTC Advanced Technology Center at Ghent, WV and WVU Sustainable Design Division location at Morgantown, WV.

Training and technical assistance has been and will continue to be provided by State Weatherization Program Specialists. The Program Specialists also perform subgrantee monitoring, so their familiarity with each subgrantee's operations enables focused attention to specific technical assistance needs of each agency. Compilation of monitoring report findings, discussions at staff meetings, peer exchanges, subgrantee feedback, and research of state-of-the-art energy conservation techniques all help determine the focus of training and technical assistance.

##### A. Training

Training will be presented in various venues and settings. Topics will be primarily driven by monitoring findings and secondarily by program developments, changes and agency needs.

West Virginia has traditionally provided technical training at subgrantee agencies on actual client job sites and due to the effectiveness of this approach will continue to do so. The ideas behind this approach to training is:

crew technicians participate better and probably learn better in actual field settings rather than classroom sites;

there is less loss of production time for crews as State Program Specialists and the crew work together on clients' homes;

Program Specialists stay more in tune with actual field techniques; and

Program Specialists gain more credence with crew technicians who perceive them more as peers than state people.

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Specific trainings will be provided, when needed, at the subgrantee agency operations. Certain training issues and topics are more effectively presented in the subgrantee agency setting utilizing the agency's equipment, systems and structures. This is particularly effective when training on administrative, record, reporting and bookkeeping issues.

Regional trainings will be utilized when the need arises. There are times when the timeliness of a training issue is critical. These trainings will be held in centralized regional locations which will allow for shorter travel distances for agencies, reducing travel expenses but still allowing for the objectives to be accomplished.

When possible, statewide and/or regional conferences will be used to keep subgrantee program administrative and management personnel updated on weatherization program developments, leveraged programs and provide a forum for collective training on topics and issues.

**B. Certifications**

The current State Weatherization Staff has an average of twenty years service in the Weatherization Assistance Program. Although no "formal" certification is required, all Program Specialists must maintain proficiency on new methods and techniques pertinent to the Weatherization Program and are furnished with all State and Federal regulations as they are released. At this time, field and training staff are BPI Building Analyst Certified. Most of the State Staff regularly participate in conducting training sessions at regional and national energy conferences, and are active participants in various national boards and committees relating to the Weatherization Assistance Program.

There are defined certification processes for subgrantee staff specific to their position. In order to be certified at a particular position, the person must attend the certification training and be able to pass the written test and field test when required with a score of 80% or greater. The following are the current defined certifications:

Estimator/Auditor (EA) Certification  
Post Work Inspector (PWI) Certification  
Energy (Client) Educator Certification  
Lead Renovator Certification  
HVAC Technician Certification

When the WV WAP Weatherization Standardized Curricula is fully implemented and available through the WVCTC system and the WV WTC, the following certifications and testing out will be required for the respective weatherization staff positions in addition to the certifications listed above:

Technician I Certification (OSHA 10 Certification included)  
Technician II Certification (OSHA 10 Certification included)  
Crew Supervisor (Chief) Certification (OSHA 30 Certification included)

In Addition to the WVWAP Weatherization Standardized Curricula level certifications, the WVWAP will continue to proctor the licensing testing through the State Fire Marshal's Office and EPA certifications testing for the following:

HVAC Electrician License

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Single Family Dwelling Electrician License  
EPA Section 608 Refrigerant Technician Certification  
EPA Lead Renovator Certification

**C. Technical Assistance**

Technical Assistance is based primarily upon the findings resulting from monitoring visits and will take place, when possible, during the monitoring visit. It will be geared toward correcting the deficiencies found during the monitoring visit. There are several instances a year when a Program Specialist goes to a subgrantee agency for a day or longer to assist in a particular training or technical need, such as assisting in a unique furnace problem. Technical assistance is also consistently given by Weatherization Staff by phone communications to subgrantee personnel.

Special projects are constantly being undertaken to ensure that the West Virginia WAP keeps up with state-of-the-art energy conservation and management techniques.

**D. Client Education**

Education on conservation issues in the home has always posed a unique problem for the Weatherization Assistance Program. The benefit of quality client education is well acknowledged, although how to provide quality education can be difficult, especially for crews geared toward meeting production goals.

Each subgrantee has identified at least one Energy Educator, who attends training and certification utilizing role-playing, participation, and discussions to acquire the skills to establish an effective means of communication between the Energy Educator and the client. After passing a certification test, the Energy Educator will work with clients to affect change in bad energy conservation habits.

The Energy Educator utilizes a tabletop easel with energy saving tips and maintenance tips for weatherization measures. The process is intended to be interactive between the Energy Educator and client. A key element of the process is a "contract" called the Energy Savers Partnership Plan, where the client agrees to do certain actions to conserve energy in their home. When possible, the Energy Educator will follow up in two months to help ensure the "contract" is being heeded.

**III.6.5 Energy Crisis Plan**

The GOEO WAP utilizes LIHEAP WAP funds to operate the Energy Crisis Intervention Program (ECIP). The intent of ECIP is to provide emergency heat for no-heat (based on inoperable or malfunctioning equipment) households during the winter heating season. The program addresses non-operable or severely malfunctioning and unsafe heating systems. Any household that is eligible for WAP is eligible for ECIP services. Any household that receives the emergency heating system repairs or replacements from ECIP must apply for regular WAP services as well. ECIP provides emergency assistance within 72 hours to insure the household will have heat. WAP services will typically be provided at a later date.

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### STATE PLAN/MASTER FILE WORKSHEET (attachment)

#### III.4 Health and Safety

##### Introduction

The Health and Safety Plan is intended to establish the policies and procedures to address health and safety concerns in the Weatherization Assistance Program (WAP). With more advanced diagnostics and installation techniques utilized in the WAP, it is increasingly necessary to take steps to insure that program measures do not cause or exacerbate health and safety problems for workers or clients. Health and safety measures eliminate hazards in a structure, to the crew, and to the clients, allowing the installation of energy efficiency materials, and insuring the home is left in a safe condition. Repairs are limited to those related to energy efficiency and conservation, for instance, alleviation of carbon monoxide being produced in a furnace as opposed to repairing porch steps.

##### Expenditures

It is estimated that health and safety measures will account for an average of 15% of Program Operations costs, with an absolute maximum of 20% allowed by any agency. Since these measures are performed by subgrantee direct hire crews, and are usually installed simultaneously with energy efficiency materials, only material costs are directly tracked. The ratio percentage of health and safety materials to all materials is applied to personnel and program support to determine those costs. The primary goal of the Weatherization Assistance Program remains energy efficiency and conservation.

##### Reporting

Subgrantee agencies report health and safety material costs on page two, Completed Dwelling Units, of the Monthly Progress Report. Total health and safety costs and percentages are tracked on the agency statistical tracking spreadsheet, maintained at both the state and local levels.

##### Plan Components

##### III.3.1. Grantee Health and Safety

All costs related to grantee health and safety are charged to either state administrative funds or Training and Technical Assistance (T&TA), as applicable. Most of these charges are for personal safety equipment and combustion testing equipment used by training and monitoring staff.

##### III.3.2. Crew Health and Safety

##### A. Spray Polyurethane Foam (SPF)

Use EPA recommendations when working within the conditioned space or when SPF fumes become evident within the conditioned space. When working outside the building envelope, isolate the area where foam will be applied, take precautions so that fumes will not transfer to inside conditioned space, and exhaust fumes outside the home.

##### B. OSHA Requirements

Local agencies must comply with applicable Occupational Safety and Health Administration (OSHA) requirements. All workers are required to have OSHA 10 hour cards and Crew Supervisors are required to have OSHA 30 hour cards.

##### C. Safety Officer

A Safety Officer is to be designated at each agency. The Safety Officer coordinates the safety program and maintains all safety personnel records. Responsibilities of the Safety Officer include but not limited to the following:

- insuring all program field personnel have access to and demonstrate the proper use, maintenance, and storage of all tools, equipment, and safety equipment;
- conducting scheduled safety meetings, documenting subject matter, keeping attendance records, and maintaining all required forms; and
- enforcing all safety regulations to insure worker safety. Personnel who are not following safety practices or not properly using safety equipment must be removed from the job site until training or correction of the violation can be provided. A report must be included in the worker's safety file.

##### D. Safety Meetings

Safety meetings should be held at a minimum of every other month. The Safety Officer should determine the content of the meetings based on issues of current importance. It is recommended to limit each meeting to one topic, such as ladder safety or Material Safety Data Sheets, to help the worker retain and understand the information covered. Content of meetings and attendance should be documented. It is recommended to give brief post tests on the addressed safety issue so employees can demonstrate their knowledge and understanding of the topic.

##### E. Respirators Fit Tests

Each Weatherization Program field employee is required to have a respirator fitted in accordance with a qualitative respirator fit test using an approved vapor of gas test agent, as described by the manufacturer of the fit test kit and OSHA/NIOSH regulations. Qualitative fit tests will be given to each employee every 12 months. The Qualitative Respirator Fit Test form for documenting the test is found at the end of this section.

Subgrantees are permitted to hire a qualified contractor to perform fit test and maintain records.

##### F. MSDS Station

A copy of a product's Material Safety Data Sheet (MSDS) shall be maintained in each warehouse at a designated "Right to Know Station." MSDS books must be maintained in each program vehicle. Each employee must have access to the information in the MSDS books. Employees will receive training on MSDS and OSHA regulations.

Workers must follow OSHA standards and Material Safety Data Sheets(MSDA) and take precautions to ensure the health and safety of themselves and other workers.

**G. Emergency Phone Numbers and Employee Information Sheet**

The warehouse and each program vehicle must contain at all times a list of emergency phone numbers in the service area, and a list of all employees with their emergency contact information. The Health Insurance Portability and Accountability Act of 1996 (HIPAA), will not allow employers to keep medical information such as employee's allergies or medications.

**H. Personal Protective Equipment****1. Head Protection**

Hard hats or bump caps are required to protect the worker from accidental head injury.

**2. Respirators**

Respirators are necessary when blowing cellulose or fiberglass insulation and when installing fiberglass batt insulation. Dust from insulation is likely the most serious potential health hazard facing crew workers, and using the correct respirator is mandated whenever handling or installing insulation.

Each field employee shall be provided with a fitted respirator. The employee will receive training on how to select, maintain, clean, and store their respirator. They are responsible for its routine maintenance. Any problems or malfunctions must be reported to the Safety Officer.

When installing any type of insulation, a full-face respirator is recommended. Filters should meet specifications N 7500-8, approved by National Institute of Occupational Safety and Health (NIOSH) and Mine Safety and Health Administration (MSHA).

Disposable dust mask respirators can also be used when full-face respirators cannot be worn. Use a NIOSH/MSHA approved respirator, such as a 3M model #8710 or #9900 or equivalent. Proper fitting is a necessity.

**3. Eye Protection**

Goggles, plastic shields or safety glasses with side shields, are to be worn whenever there is a chance of particles flying into the eyes. Use the proper eye protection whenever drilling, blowing insulation, cutting glass or Plexiglas, working with fiberglass and sawing. Glasses and sunglasses are not approved eye protection.

**4. Gloves**

Each worker should have good quality work gloves. These will protect the hands while handling glass, fiberglass, aluminum, wood, and cellulose. Gloves with cuffs are recommended since they also protect the wrist.

**5. Shoes**

Good quality work boots are recommended. Good quality means boots (or shoes) with a heavy, treaded sole that offers support, traction and protection. The uppers should be made of leather to protect the ankles and lower leg from scrapes and punctures. Tennis or other athletic shoes are not permitted.

**6. Clothing**

Work clothes should be worn instead of old dress clothes. Long sleeved shirts offer better protection than T-shirts. Long pants offer more protection than short pants or dresses/skirts. Wear layers of clothing so that you can adjust to the temperature of your environment. Loose clothing helps prevent insulation fibers or dust from rubbing against the skin.

It should be noted, that while working in winter temperatures, that several layers of lighter clothing will keep you warmer and afford easier movement than heavy and bulky clothes.

**7. Personal Protection Rules**

- Confine long hair so that it is not exposed to machinery and does not interfere with vision.
- Require the wearing of safety goggles, glasses or other eye protection when there is danger of eye injury.
- Enforce the use of respirators where harmful dusts or fumes exist.
- Require workers to remove rings and other jewelry while working on-the-job or in the shop area.
- Where noise levels are excessive over long periods of time, ear protection must be worn.
- Protective apparel (refer to Mandated Protective Equipment) must be worn as required by the nature of the task.
- Dresses/skirts must not be worn on the job site.
- Determine the physical defects and limitations of all those on the job so that they will not be assigned tasks detrimental to their health or physical condition.
- Prohibit the wearing of clothing that could be loose enough that it could get caught on protruding objects or caught in machinery or power tools.

**I. Crew Safety Equipment**

The following is a list of mandated safety equipment that each crew must have on the job in accordance with the tasks scheduled to be performed:

- Water jug and cups
- Exhaust fan for the attic
- Ladder levelers
- Ladder stabilizers
- Ground Fault Circuit Interrupters(GFCI)
- Proper type and gauge extension cords for the task, but at least 12 gauge with ground (12-3)
- Double insulated power tools
- Trouble light, three-wire including ground
- Bee spray
- Industrial or commercial size first aid kit
- Fire extinguisher
- Flares, hazard warning triangles or warning lights
- Flashlight
- Ground cable for generator

**1. Body Mechanics**

- Use as many muscles as possible to distribute the work load.



- Both hands are used to pick up heavier objects.
- Lifting heavy objects alone is to be avoided. Help should be requested.
- Pushing is preferred to pulling.
- Leg muscles are used to lift heavy objects rather than back muscles.
- Bending and unnecessary twisting of the body for any length of time is to be avoided.
- Work is done at the proper level.
- Long pieces of material are carried by two people.

## 2. GFCI

Whenever power tools or electrical equipment are used, it is mandatory that a Ground Fault Circuit Interrupter (GFCI) be used.

Since GFCI's merely sense differences in current flow between one side of a circuit and another, they protect people, not wires. If a short circuit should develop, the GFCI will probably open, but it may not before the fuse blows. The practical message then is: 1) avoid hazardous situations that could cause short circuits, and 2) bring along extra fuses just in case.

GFCI's cannot protect you from all possible kinds of shock. If you cut through the extension cord feeding the GFCI you will get shocked. Or, if you cut through another wire in the attic not connected to a GFCI, you will get shocked. A GFCI only protects you from shock that could occur between you and the GFCI.

Sometimes the GFCI opens the circuit for no apparent reason. These are called "nuisance faults". Though the GFCI can be reset quickly, such faults are normally detecting a problem that needs to be investigated. A tool may have an intermittent ground fault. This can be the most dangerous kind of electrical problem of all, for it may occur when you least expect it. If a GFCI continually needs resetting for all tools, check the GFCI. If a particular tool frequently causes the GFCI to open, check the tool.

Read the directions on the GFCI you purchase and brief your crews carefully before sending them out. Portable units are sturdy, but like all good equipment, they should be treated with care and kept away from dirt and moisture.

## 3. Electrical Safety

All of the following practices and procedures are generally accepted safety practices and should be observed at all times.

- Equipment shall be properly grounded.
- All switch boxes, junction boxes, wires, and conduits must be properly covered or closed.
- Wire and cords that are defective, inadequate, worn, frayed, wet, oily, or have deteriorated insulation, must be replaced.
- Defective switches, receptacles, extension cords, lamp sockets, tools, or equipment must be repaired immediately or properly marked and made inoperable.
- All stationary and portable electrical tools must be properly connected and grounded according to manufacturer's specifications (except double insulated tools).
- Ground Fault Circuit Interrupters (GFCI) must be used.
- Broken housing and loose or vibrating machine parts must be replaced before equipment is used.
- Electrical panels, switch boxes, motors and other electrical equipment must never be cleaned with water or dangerous solvents.
- Never overload circuits or overfuse circuits by using the wrong size or type of fuse.
- All equipment or circuits being worked on or repaired must be locked out or otherwise de-energized and tagged.
- All installation or extension of electrical facilities must comply with the National Electrical Code.
- Heavy duty, grounded extension cords designed for industrial services only must be used.
- Extension cords must never be used to operate stationary equipment or other permanent operations.
- Clearance of 30 inches and clear access must be maintained around all electrical panels.
- Work practices, which overload motors, insulation, wires, or electrical accessories, must be avoided.
- Electrical cords must be disconnected by pulling on the plug, not the cord.
- All switch panels, circuits, outlets and boxes at the warehouse and office must be utilized for all electrical installations.

## 4. Generator Safety

- Generators should be used on the job site rather than the client's home electrical supply.
- Generators must be grounded according to manufacturer's specifications with a ground rod driven into the ground and connected by ground wire.
- Generators must not be used in any enclosed area, including the back of the weatherization truck.
- Never add fuel to generator while hot, let the generator cool before adding fuel.
- Exhaust from the generator must always be released to the outdoors and away from the home.
- A maintenance checklist and usage log will be maintained for each generator.

## J. Hot Weather Precautions

If proper precautions are taken, the vast majority of heat problems can be avoided. When working in high temperatures, drink large quantities of cool water (10-15 glasses a day). Eat light, easily digestible foods.

- Whenever possible, take turns when blowing insulation in the attic. Do not spend more than 15 to 20 minutes at a time in the attic. If dizziness occurs, get out of the attic immediately.
- Plenty of cool water and salt tablets (for those permitted to take them - be sure you know if any worker has high blood pressure) are the best prevention against heat related problems.
- Attic work should be started and finished early. Predetermine the temperature at which the work in the attic will stop.
- Be sure that work in an unvented attic does not begin until the vent openings are cut. It is mandated that each crew have an electric fan to aid in the ventilation of the attic.
- Familiarize yourself and fellow workers with the symptoms of heat stroke, heat exhaustion, and heat cramps. (Discussed below).
- Mandated protective equipment such as hard hats, goggles, respirators, and long sleeve shirts, although uncomfortable, must be worn while insulating work is being done to prevent short-term and possible long-term problems to the eyes, skin and lungs. When

insulating in hot weather, limit time in the attic and drink plenty of water.

1. **Heat Stroke:** Heat stroke is a life threatening condition. A person who shows symptoms of heat stroke, becomes dizzy and then quickly loses consciousness. They may have a severe headache before they lose consciousness. Their face will be red and the skin will be hot and dry. There will be no perspiration. The pulse will be strong and rapid and breathing will be labored and the pupils of the eyes will be dilated.

- Get medical help at once!
- Treatment: lower the body temperature as soon as possible. Get the person to a cool place and elevate their head to reduce the flow of blood to the brain.
- Remove most of the person's clothing and cool the body using a wet sheet, water, or whatever is on hand. Rub the body and head with ice if it is available.
- Continue the treatment until consciousness returns or the temperature returns to normal. Watch for signs of shock and treat accordingly.
- Give the patient all the cool water he wants, but no stimulants.
- If the person becomes hot and dry again, renew the cold application.

2. **Heat Exhaustion:** Heat exhaustion is a state of collapse from the effects of heat. It happens more often when the humidity is high. The person feels very weak and will probably vomit. They may feel chilly. The pulse is rapid and weak and breathing is shallow.

- Get medical help at once!
- The treatment is the same as for shock. Place the person with their head lower than the rest of their body. The mouth should be cleaned and the body covered. Apply cold compresses.
- Give small amount of fluids or a pinch of salt in a glass of water. If the person vomits, do not give any more fluids.
- A person that has suffered from heat exhaustion should not work for a few days.

3. **Heat Cramps:** Heat cramps are painful muscle spasms that happen most often in the abdomen, arms, and legs. Heat cramps occur while doing hard work in high temperatures without taking any precautions. They may be slight or convulsive and may last a few minutes to 24 hours. After being relieved, the spasms may be renewed by exposure to a cold draft or exertion. Loss of salt from muscle tissue is the main cause of heat cramps.

#### **K. Cold Weather Safety Precautions**

The following are recommended cold weather practices and precautions:

- Agency personnel should pay particular attention to weather forecasts in the winter season. This enables work to be scheduled according to changes in the weather and to alter clothing accordingly.
- Proper clothing is extremely important in the winter. Crew members should be supplied hard hat liners and two sets of warm winter gloves. They should also be encouraged to use insulated boots with a non-slip tread.
- For warmth, several layers of light clothing are recommended instead of thick bulky clothing, to allow for freer movement. A pair of insulated coveralls is a good idea.
- All crew members should be made aware that strenuous work for long periods of time is dangerous because the body does not think it is as tired as it really is. Work should be done in short intervals to prevent exposure and overtiring.
- Trips in and out of the house should be kept to a minimum to prevent cooling of the dwelling unit, exposing the client to the cold, and tracking snow and mud into the dwelling.
- Power tools should be used with extreme caution due to the possibility of electrical shock caused by wet feet, wet ground, and bad footing.
- Blower machines should be protected from the weather by elevating them on blocks, placing them on dry plywood or lumber, or placing them in a dry covered area (porch, stepvan, garage, truck, etc.).
- All tools and equipment with motors should be warmed up prior to use.
- Care should be taken in the placement of extension and power cords.
- Exercise extreme caution and sound judgment concerning ladder work on extremely windy days.
- Ladders should be dug into the ground to provide a non-slip footing.
- Taking frequent breaks and drinking plenty of warm liquids will keep you warm and help prevent sickness.
- Be especially aware of the symptoms of frostbite and hypothermia.

#### **L. Fire Safety - Office, Warehouse, and Vehicles**

The following safety practices are critical to prevent the risk of fire in the office, warehouse, and vehicles:

- Provide and properly mount approved fire extinguishers of sufficient size in vehicles, warehouses and offices. Multi-purpose dry chemical units are most effective for general use. Multi-purpose dry chemicals can damage delicate electrical equipment. Gas type extinguishers eliminate that problem. Halon 1211 is more effective and less costly than CO2 for extinguishing electrical fires.
- Inspect and document fire extinguishers at regular intervals to ascertain that they are fully charged and in proper working condition.
- When storing flammable liquids, observe the following:
  - Limit supply to small amounts. Keep flammable liquids on hand only if absolutely necessary.
  - Store flammables properly in approved safety containers and in well ventilated areas. Make sure all containers are labeled.
  - Dispose of them safely in metal containers with tight lids. Discard them as soon as possible.
  - Clean up spills or leaks promptly.
  - Never smoke around flammable liquids. Even a tiny spark or ash can cause a fire or explosion.
  - Provide instruction to agency personnel in the location and the proper use of fire extinguishers and other fire fighting equipment.
  - Segregate oxidizers and oily materials in storage.

- o Provide Underwriters Laboratories Listed or oily waste containers for oily and paint soaked rags. It is a good policy to place waste with spontaneous combustion potential in water filled containers.
- o Post fire alarm and evacuation procedures.
- o When possible, prohibit use of flammable liquids for cleaning purposes.
- o Provide for bulk storage of flammable materials in an area removed from agency facilities.
- o Agency personnel should be aware of the location of emergency shutoff valves and switches in the event of a fire.
- o Do not stack materials within 30 inches of sprinkler heads.

#### **M. Power Tool Safety**

The following are recognized safety practices concerning power tool use. Be aware that improper handling and operation of power tools can cause very serious injuries and possibly death. See also the Electrical Safety and Equipment Safety subsection.

- Always use a Ground Fault Circuit Interrupter.
- Remove jewelry, eliminate loose clothing, and confine long hair.
- Be sure there is enough light to do the job safely.
- Keep all safety guards in position and wear protective equipment. Eye protection is always in order.
- Be sure to use grounded plugs or double insulated power tools.
- When cords become damaged, they must be taken out of service.
- Never operate power tools with an unclear head.
- While operating a power tool, give it your undivided attention.
- Do not distract or in any other way disturb a person using a power tool.
- Never operate power tools unless you are thoroughly familiar with the controls and operations. When in doubt, consult someone who is familiar with them.
- All power tools should be carefully inspected regularly. Look for frayed or bare wires, dirt and dust in the tool, and a tight connection of the cord.
- Make sure that the blade or bit is tightly clamped to the chuck.
- Make sure that the power switch on the tool is off before connecting it to the power sources.
- Keep cutting pressure constant and do not force the blade or bit into the material.
- Never try to clear jammed power tools until you disconnect the power source.
- After using a power tool, turn the power off and remove the plug from the power source. After tool movement has stopped, clean the tool before putting it away.
- When using an extension cord, always plug the tool into the extension cord before the extension cord is connected to the power source. Break the connection between the extension cord and the power source before disconnecting the tool from the extension cord. The tool cord and extension cord should generally not be longer than 25 feet each to guard against overheating.
- Be sure that power cords do not come in contact with sharp objects.
- Tool cords and extension cords should be long enough so that they do not need to be pulled tight.
- Cords should be checked often to detect overheating. If a cord is uncomfortably warm, then something is not right and warrants inspection by a qualified person.
- Make sure that cords are lying so that they do not interfere with other workers.
- Electricity must be regarded with respect and handled properly. If there is water in the area extreme caution must be observed. Water will greatly increase the chance of grounding and shock.
- Workers must always report any shock received from electrical equipment no matter how minor the shock might be. Minor shocks can lead to fatal shocks.

#### **N. Hand Tool Safety**

Hand tools are sometimes taken for granted but are used more often than other tools and equipment. The following are safety practices concerning the use of hand tools on the job:

- Establish regular tool inspection procedures to insure that hand tools are maintained in a safe condition. Dull blades, broken screwdriver blades, cracked handles or loose heads can cause injuries.
- Use good quality tools instead of cheap ones.
- Keep hand tools in a safe place. Tools left lying around can get stepped on and broken or become a tripping hazard.
- Do not lay a tool near power tools in use.
- Do not put sharp objects or tools in pockets of clothes. This could result in being stabbed or cut.
- Use the proper tool for the job.

#### **O. Ladder Safety**

The following safety practices for using ladders are particularly critical due to the potential of serious injury when working with ladders:

- Ladder levelers and stabilizers are to be used on all straight and extension ladders.
- Inspection of ladders are required before each use in order to find bends and cracks that could weaken the ladder.
- Check before each use the shoes at the bottom of the ladder to see that they are intact and secure.
- Ladders must not be placed on boxes, barrels, or other unsuitable bases to obtain additional height.
- Ladders are to be stored horizontally on the floor or on supports to prevent sagging.
- The rungs are to be kept in a non-slippery condition.
- Follow the "Rule of Ten": Keep ladders at least ten feet from power lines running into the house.
- Brace the ladder when you are raising it. Walk forward under the ladder, grasping each rung until it is upright. Use part of the house or have another person brace the ladder. Make sure the ladder will clear wires and trees.

- Special precautions should be taken when erecting and climbing a ladder on a windy day.
- Set the base of the ladder out one foot from the house for every four feet up.
- No ladder should be used to gain access to a roof or any other elevated position unless the top of the ladder shall extend at least three feet above the point of support.
- Make sure the parts of the extension ladders overlap enough.
- Have another worker hold the ladder if the ladder is extended over half of its closed length or there is a question as to its stability.
- Be sure that your shoes are not greasy, muddy or slippery before climbing.
- Always face the ladder when climbing up or climbing down-using the 3 point contact method, (two hands, one foot or two feet, one hand). Refer to OSHA safety fact sheet.
- Keep your belt buckle between the ladder rails. Do not overreach. Moving the ladder is more sensible than a possible serious injury.
- If materials are to be carried up and down a ladder, carry them with the front end elevated.
- Carry tools in a tool belt. Use both hands for climbing up and down.
- Do not climb higher than the third rung from the top on straight or extension ladders.
- Do not climb higher than the second tread from the top on stepladders.
- Block and guard ladders when they must be placed in driveways or on walkways.
- Never drop a ladder, it can weaken the ladder.

## **P. Pests in the Attic and Crawl space**

Infestation may be cause for deferral.

### **1. Bees, Wasps, and Other Flying Insects**

- Find out if anyone in your program is allergic to bee stings. If so, have them obtain an anti-venom kit from a local drug store and instruct them to have it with them at all times while on the job.
- If a person on your crew is allergic to bee stings, it is important that this person is alerted if an unseen nest is disturbed so that they can move to a safe distance from the swarm.
- It is possible that a person may not know that they are allergic to bee stings. The symptoms of an allergic reaction are faintness, nausea, and/or shortness of breath. If a person is experiencing these symptoms - GET MEDICAL HELP AT ONCE.
- If a dwelling is known to have a bee problem, plan ahead of time to exterminate the bees. This will allow the attic or crawl space to air out and prevent unnecessary inhalation of the insecticides used. Late in the evening or early in the morning while the bees are in their nest is the best time to exterminate.

### **2. Rats and Mice**

- Rats and mice are usually found where you find food scraps at open garbage bins.
- The client or landlord should be told to remove any harborage within 100 feet of the dwelling unit.
- The droppings are of major concern since contact with them can create infectious diseases. Soap will not cleanse harmful bacteria from the skin. A disinfectant towelette should be used.
- If a rat or mouse bites someone, medical attention should be sought immediately.
- If the infestation is particularly serious, notify the local Health Department.

### **3. Bats**

- To remove bats from a dwelling, first tightly close any large openings and then caulk, pack, or cover with galvanized mesh all but the opening they use most; then wait until all the bats have left the attic and close the hole.
- Dried droppings are the major source of contamination from bats. When working around the droppings an aseptic mask should be worn and skin contact with droppings should be avoided by wearing rubber gloves. Wearing goggles can prevent contact through the eyes. If bats are present, gloves and heavy clothes should be worn to prevent possible bites.
- Bat bites are rare; however, if a crew member is bitten, a physician should treat them. An effort should also be made to obtain the particular bat.
- If the infestation is particularly serious, notify the local Health Department.

### **4. Snakes**

- To eliminate snakes, eliminate harborage such as lumber piles, rock piles, and debris under porches and house.
- When working where the presence of snakes is a possibility, wear protective leg and foot covering and heavy gloves.
- If a poisonous snake bites a person they should be transported to a medical facility at once, particularly, if that person was bitten by a rattlesnake. First aid should be administered immediately.
- Poison control hotline telephone number is 800-222-1222.

## **Q. Safety in the Attic**

The following considerations should be noted on the Weatherization Work Plan so that a worker can be aware of what he will be dealing with when preparing to do attic work:

- Is there a chimney or flue? If so, does it need a collar or dam?
- Are there exposed wires? If so, the client should be informed to have them replaced before insulating work can be done.
- Are there open electrical junction boxes? These will have to be covered with junction box covers or fiberglass batts with the vapor barrier removed before insulating can be done.
- Are the ceiling joists strong enough to support a worker's weight?
- Are there recessed light fixtures? Never insulate over a recessed light fixture unless it is labeled "Type IC" (these double-housed

fixtures are rated to be in contact with insulation).

- What type of pests might be encountered in the attic? Bees are usually encountered in an attic especially in the summer months. All programs should have an adequate supply of bee spray. Bats may be encountered and this constitutes a health problem. A person can still be infected by rabies from contaminated air. If bats are present the local Health Department should be contacted.
- Be aware of children and large animals such as dogs. You must remember that you are liable for the client's family safety as well as your own. Children may be injured by tools or by climbing on ladders. Advise the client to keep children out of the work area. If animals become a problem have the client remove them accordingly.

The following equipment should be used when working in the attic:

- Hard Hat
- Goggles
- Respirator
- Gloves
- Long pants
- Lighting
- Walking Board(s)
- Fan(s) for ventilation

#### Other Attic Precautions

- Be aware of what you are doing at all time. Be aware of what is above you, behind you, to the sides of you, and below you.
- Be sure there is sufficient lighting and ventilation for the job you are doing.
- Be especially cautious in hot weather.
- Be aware of electrical service wires at all times!!

### III.3.3. Client Health and Safety

#### A. Main Problems Encountered

- Related to combustion appliances
- Poor indoor air quality related to excess moisture
- Electrical hazards potentially causing injury or fire

#### B. Health Concerns of the Occupants

Crews need to take all reasonable precautions to consider the health concerns of each occupant in the home, the condition of the dwelling, and the possible effect of work to be performed on any particular health or medical conditions of the occupants. A person allergic to dust, for instance, should not remain in the home while insulation is being blown.

Minor upgrades and repairs necessary to perform specific weatherization measures and where the health or safety of the occupant is at risk are allowed.

A job can be deferred based on inability to take appropriate actions or relocation of client.

##### 1. Smoke Alarms

Smoke alarms are to be installed whenever the crew works on any combustion appliance in the home. Smoke alarms should be installed on the same floor as the heating unit, and at least one on each floor of the unit near bedrooms.

##### 2. Carbon Monoxide Alarms

Carbon monoxide alarms (CO) should be installed near any heating system where there has been a detected CO problem. A combination CO/Smoke alarm is also an option to install when appropriate. All CO alarms installed shall comply with the latest Underwriters Laboratory standards (ANSI/UL 2034).

##### 3. Exhaust Fans

Exhaust fans should be made operable if existing or installed in kitchens and bathrooms if there is any evidence of excessive moisture.

##### 4. Duct Cleaning and Sealing

All supply and return ducts must be sealed for energy efficiency and to prevent foreign particulates from entering and being blown into the conditioned space. Leaky ductwork can also create positive or negative pressures (depending on location of leaks in supply and return ducts), that can have an effect on the draft of combustion appliances.

Since ducts supply the conditioned air which residents of a dwelling breathe, it is important that they be kept as clean as possible. Crews clean the ducts around registers and replace furnace filters. They also provide client education on the importance of these issues.

### III.3.4. Potential Hazard Conditions

#### A. Biologicals

The detection and remediation of mold, odors, viruses, bacteria, unsanitary conditions, and rotting wood is often beyond the scope of the Weatherization Program, and may be a reason for delaying work. Since workers often encounter these conditions, they try to remedy the situation if possible and take precaution to not exacerbate any potential problem. Factors such as cleaning agents, paints and turpentine, gasoline, sewage, animal waste, and excessive dust can sometimes be addressed to allow weatherization work to occur.

Moisture Remediation, Assessment, and Repair

##### 1. Moisture Problems

The use of DOE funds for the removal of mold and other related biological substances is not an allowable weatherization expense. Generally, DOE funds should not be used to test, abate, remediate, purchase insurance, or alleviate existing mold conditions identified during the audit/estimate, the work performance period, or the quality control inspection. Other funding sources should be sought to cover the cost of cleaning or cleaning moldy surfaces.

All homes shall be inspected for previous and existing moisture problems using the Mold and Moisture Assessment Findings Form to assist in identifying mold and moisture related problems in homes.

In West Virginia, excessive moisture is often a problem. Common measures for dealing with potential moisture problems include:

- the repair or installation of bathroom and kitchen exhaust fans;
- the installation of ground vapor barriers of 6 mil plastic under enclosed foundation mobile homes, houses receiving sidewall insulation, or any house with excessive dampness in the crawl space;
- the repair or installation of dryer vents to be properly vented to beyond the perimeter of the crawl space or basement;
- the installation of attic ventilation and crawl space ventilation, when appropriate;
- the establishment of a MVR to insure air sealing measures do not tighten the home beyond acceptable levels;
- the installation of continually operating low cfm flow exhaust fans in extremely tight homes; and
- the replacement of downspouts and/or gutter sections to divert moisture from the dwelling.

## 2. Energy Related Mold and Moisture

Moisture, mold, and mildew can seriously affect the health and safety of the client and crew. Steps must be taken to alleviate moisture problems. The Weatherization Program should ensure that regular weatherization work is performed in a manner that doesn't contribute to the increase of any mold problems and when the work is performed properly, can alleviate many mold conditions.

The Weatherization Assistance Program is not a mold remediation program. The use of DOE funds for the removal of mold and other related biological substances is not an allowable weatherization expense. If necessary, Weatherization Program services may need to be delayed until the existing mold problem can be corrected or referred to another agency for funding of remedial action.

The most common sources of moisture are leaky roofs and damp foundations from ground water. Other moisture sources include unvented dryers, unvented gas appliances, like ranges or decorative fireplaces, showers in bathrooms without exhaust fans and cooking appliances. One of the largest sources of household water vapor is the occupants themselves, through respiration and perspiration.

Therefore the number of people in the home will be a key factor. The type of climate that the region has also is important. A region that has a lot of rain and humidity, like West Virginia, or extreme temperatures is more likely to have a moisture problem.

Building rehabilitation is beyond the scope of the Weatherization Assistance Program. Homes with conditions that require more than incidental repair should be deferred. Other funding sources if available could be used to alleviate problem.

The following steps are the process in addressing moisture problems within the West Virginia Weatherization Program:

1. Assessment of moisture conditions - All homes prior to weatherization shall be inspected for previous or existing moisture problems. Identifying and eliminating the sources of the moisture should be the first priority when a moisture problem is found.

2. The Mold and Moisture Assessment Findings Form must be completed to identify if there are moisture problems in the home. This form becomes part of the client file.

3. Existing moisture, mold or mildew - deferral of service - If it is determined that the problems are too severe and cannot be eliminated, there can be a deferral of service. The Deferral of Service form must be signed and left with the client and a copy placed in the client file.

4. Existing moisture, mold or mildew - elimination under Weatherization - If an existing moisture, mold or mildew problem is found, the agency may determine that the job can be completed under the scope of the Weatherization Program. The client must sign the Hold Harmless Statement informing the client of the existing problem(s), leaving a copy with the client and a copy in the client file.

5. Repair or elimination of moisture problems - Moisture problems must be eliminated before the Weatherization job is completed. Possible areas that can be addressed are:

- Venting dryers to the outside
- Ventilation systems for acceptable indoor air quality
- New systems, intermittent operation
- New systems, continuous operation
- Existing exhaust fans

## 1. Assessment of Moisture Conditions

All homes prior to weatherization must be checked for previous or existing moisture problems.

1. The Mold and Moisture Assessment Findings Form shall be completed and given to the client and placed in the client file. Give special attention to the following signs:

- a. Evidence of condensation on windows and walls indicated by stains or mold. Inspect closets, especially those that are connected to outside walls. Clothes may need to be moved or removed in order to inspect the walls.
- b. Check for any standing water, open sumps, open wells, or "wet weather springs", dirt floors, water stains, etc. in basements. Also, check to see if firewood is stored in any conditioned space or the basement and with the client's permission remove the wood to a sheltered space outside. Ask the client if laundry is hung to dry indoors during the winter months.
- c. Leaking supply or waste pipes.
- d. If there is a high efficiency furnace present, the condensate drain line should be installed in accordance with the HVAC installation standards.
- e. Attic roof sheathing shows signs of mold or mildew.
- f. Inspect the top plates of all walls and chase-ways while in the attic. Balloon frame type walls, or bypasses, if left untreated can move moisture from the basement or crawlspace directly to the attic.
- g. Inspect the structure for the possibility of a "roof over". If a newer roof has been installed over an existing older roof then the crew must extend any vent pipes through the new roof and properly seal the penetrations.

2. Identification of existing or potential moisture problems shall be documented on the Mold and Moisture Assessment Findings Form and included in the client file.

## 2. Existing Moisture, Mold or Mildew - Deferral of Service

If an existing moisture, mold or mildew problem is found, the agency must determine if the moisture problem can be fixed under the scope of weatherization or if there should be a Deferral of Service because of the severity of the problem (typically 10 square feet or more of affected surface).

1. If it is determined that the problems are too severe under the scope of weatherization, a Deferral of Service form must be signed at the time of inspection and left with the client and a copy placed in the client file.
2. Client education must be given to the client to inform them of the health and safety problems associated with mold or mildew

and the possible solutions that they can do so the dwelling can be weatherized safely at a later date.

3. The subgrantee agency should try to refer the client to other programs or agencies that may be able to assist in resolution of the problem.

### 3. Existing Moisture, Mold or Mildew - Elimination under Weatherization

If an existing moisture, mold, or mildew problem is found and the agency determines that the job can be completed under the scope of the Weatherization Program, then:

1. The agency will have the client sign the Hold Harmless Statement informing the client of the existing problem(s), leaving a copy with the client and a copy in the client file.
2. Because air tightening may cause an increase in relative humidity, client education should include information about any adverse health effects if moisture problems are left untreated and possible solutions.
3. A dwelling that has a CFM50 greater than the Building Tightness Limit is no guarantee that moisture will not be a problem in that home.
4. The agency will repair or eliminate the moisture problem and weatherize the dwelling in accordance with program regulations.
5. Containment of the work area is not necessary if the affected area is less than 10 square feet of surface area. Vacating people from spaces adjacent to the work area is not necessary, but is recommended when children less than 12 months old are in the house. People suffering from any health conditions should be kept away from the area being cleaned.

### 4. Repair or Elimination of Moisture Problems

In the course of weatherization, measures that help reduce the humidity levels in the house may be installed. Examples of these measures are venting dryers to the outside, venting existing bath or kitchen exhaust fans or installing moisture barriers on dirt floors. Repair of moisture problems that might 1) result in health problems for the client 2) damage the structure over the short- or long-term, or 3) diminish the effectiveness of the weatherization measures, must be done before the weatherization job is completed.

Moisture problems can be reduced or eliminated by controlling the source of the moisture. This can involve:

- Installing a ground vapor barrier of 6 mil black plastic on a crawlspace floor.
- Venting dryers to the outside of the dwelling.
- Sealing the foundation.
- Providing positive drainage away from the foundation.
- Repairing the roof, flashing, gutter, and downspouts.
- Educating the client about the sources of moisture that they are able to control.
- Removal of unvented space heaters.

Moisture problems can be reduced or eliminated by ventilating areas where excessive moisture is produced, such as bathrooms and kitchens. This should include installation of a high quality properly sized exhaust fan in the subject area and informing the client of the related moisture issues and the proper operation and use of the fan.

#### Dryer Vents

1. Electric or gas dryers must be vented to the outside of the dwelling.
2. Mobile home dryer vents must be extended through the skirting to the outside.
3. Dryer venting must be of flexible metal vent pipe. No more than two 90o elbows may be used in the vent system. Flexible metal vent pipe may be used if it does not exceed 6 feet in length.
4. Gas dryer vent pipe should not be installed with sheet metal screws or other intrusive fasteners that will collect lint (according to NFPA 54).

#### Ventilation Systems for Acceptable Indoor Air Quality

The West Virginia Weatherization Program will work toward implementing ASHRAE 62.2 2010 or most current version that is finalized in the DOE National Weatherization Standard Work Specifications regarding the BTL or MVR.

Acceptable indoor air quality is a high priority for the West Virginia Weatherization Program. Whenever a dwelling is tighter than the building Tightness Limit (BTL), the installation and operation of continuous ventilation should be considered in order to comply with national indoor air quality guidelines. Additionally, even if a dwelling is looser than the BTL, ventilation installed to ensure acceptable indoor air quality is sometimes warranted. Examples of such unusual cases include houses suffering from severe moisture problems and houses with many cigarette smokers.

#### Bathroom and Kitchen Exhaust Fans

1. Bathrooms should have a 50 CFM exhaust fan to remove moisture and odors from the room. This fan should be operated by an on-off switch or a tier switch.
2. Kitchens should have a 100 CFM exhaust fan to remove odors and cooking gases to the outdoors; a range hood fan is preferred. This fan should be operated by an on-off switch.

#### New Systems, Intermittent Operation

1. Exhaust fans that are intended for on-demand operation include kitchen and bathroom exhaust fans in dwellings that may or may not be tighter than the calculated Building Tightness Limit. These fans are intended for occasional use during cooking, baking, showering, and other times when moisture and odors are created by household activities.
2. High quality exhaust fans should be used with appropriate consideration for noise levels (recommend 2.5 sones or less) and CFM rating for square footage being vented. Exhaust fans should be operated with a light switch when possible so they are in constant operation with minimum involvement from the client.
3. Exhaust system ductwork shall consist of galvanized metal, rigid aluminum, PVC, or aluminum flex duct under six (6) feet in length.
4. Exhaust system ductwork shall be extended through the roof, sidewall, or soffit to the outside and be insulated.
5. Controls for the fan should be installed in the same room as the fan.

#### New Systems, Continuous Operation

1. Ventilation systems are recommended in dwellings that are tighter than the calculated Building Tightness Limit or have a pre-existing moisture problem or other indoor air quality problem that cannot be corrected by any other means.
2. Ventilation systems are allowed in units that will receive substantial reductions in air leakage and as a result may develop moisture problems. Exhaust fans installed for these reasons should be operated continuously when the dwelling is closed up to the outdoor air during winter mechanical heating or summer mechanical cooling.
3. Exhaust system ductwork shall consist of galvanized metal, rigid aluminum, PVC, or aluminum flex duct under six (6) feet in length.

4. Exhaust system ductwork shall be extended through the roof, sidewall, or soffit to the outside.
5. For continuously operated exhaust fans, controls may be by a push button switch, a separate on/off wall switch, or hard wiring with a remotely located switch. Controls may be installed in the same room as the fan.
6. The exhaust fans should be located as close as possible to the center of the house.
7. When installing a continuously operating exhaust fan, educating the client about its use is extremely important. The client should be informed about:
  - The purpose(s) of the exhaust fan installation.
  - The importance of operating the fan whenever the house is closed up, such as during the heating season.
  - The disadvantages of not operating the exhaust fan.

#### Existing Exhaust Fans

1. Existing mechanical exhaust ventilation systems should be made operable or replaced if not working.
2. Existing mechanical exhaust ventilation systems should be made to terminate outside the dwelling by extending the ventilation duct through the roof or sidewall.
3. Replacement exhaust system ductwork shall consist of galvanized metal, rigid aluminum, PVC, or aluminum flex duct under six (6) feet in length and insulated.

#### ASHRAE Standard 62.2

Ventilation and other indoor air quality measures may be based on *Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings* (ASHRAE Standard 62.2-2007) instead of *Standard for Acceptable Indoor Air Quality* (ASHRAE Standard 62-2001).

#### 3. Unsanitary Conditions

Unsanitary conditions, including raw sewage, are sometimes encountered. Traditionally, crews have done their best under the circumstances to proceed with weatherization work. If the conditions would endanger either the crew or client if work were performed, the house may be deferred until such conditions can be corrected.

### B. Combustion Appliances and Combustion Gases

#### 1. Combustion Safety Tests

With the integration of blower door technology and dense pack sidewall insulation, houses are being sealed tighter than ever before. In accordance with the "House as a System" approach to weatherization, we recognize that there can be existing indoor air quality conditions that may be intensified by current air sealing techniques. Therefore, the following health and safety measures will be performed on all combustion appliances of homes to be weatherized:

- A CO test of all combustion appliances of undiluted flue gases or near the exhaust of unvented appliances must be done. If a CO level above 100 ppm is found in the undiluted flue gas sample, corrective action must be taken to reduce the CO to acceptable levels. If readings are detected above the minimum levels then no weatherization work is to be done until the problem is corrected.
- An ambient air test for CO must be taken on coal, wood, unvented heaters and gas cook stoves. If any level of CO above 9 ppm is found, the source must be identified and the problem corrected.
- A gas leak detection test must be taken on all natural and LP gas appliances and supply lines. All gas leaks must be repaired before any work is done. Oil supply lines and components must also be checked for leaks.
- A draft test on all vented natural gas, LP gas and oil appliances must be performed to ensure an adequate draft.
- An inspection of the vent system must be completed to ensure that the proper size and type of pipe is used, the condition of the vent pipe is satisfactory, the clearance meets applicable codes, and the vent system is unobstructed.
- Test for backdraft and the potential for flue gasses to spill into the living space.
- Identify the combustion air source and make sure it is unobstructed and sufficient, as defined by NFPA code.

A detailed description of these tests and the methods and techniques for resolving them appears in the Field Standards.

The local agency will be responsible for any potential health and safety problems that will be compounded if prescribed conservation measures are performed. For example, if a furnace is emitting unacceptable levels of CO, it is likely that tightening the home would increase the problem due to possible changes in draft and less air exchanges to dilute any CO in the living space. Therefore, this problem must be fixed before any air sealing is done.

#### 2. Appliance Checklists

There are ten separate appliance checklists that identify step-by-step procedures to inspect and test the various heating appliances found in West Virginia homes. The checklists focus on the safe operation of the units and its components. The separate checklists are for:

1. Oil-fired furnaces
2. Electric furnaces
3. Gas-fired atmospheric furnaces (Category I)
4. Gas-fired mid-efficiency furnaces (fan-assisted Category I)
5. Gas-fired high-efficiency furnaces, 90-plus (Categories III or IV)
6. Gas-fired cooking ranges
7. Gas-fired storage water heaters
8. Solid fuel appliances
9. Air conditioners, central and room units
10. Heat pumps, split, and packaged systems

#### 1. Hold Harmless Statement

If some measures are too costly for the program to absorb, or outside the realm of normal Weatherization Program practices, they must be identified and explained to the client. A Hold-Harmless statement must be signed to allow weatherization work to begin. The form was revised for Program Year 2005 and is now in the form of a checklist on one form rather than multiple forms. Examples of a situation



requiring a signed Hold Harmless Statement would be single wall vents that are not deteriorated and are drafting correctly, when the code calls for a double wall vent. The Weatherization Assistance Program may not be able to afford complete renovations of the heating system to ensure the entire system is up to code. (Any installations made by the Weatherization Program, however, will be made according to NFPA and NEC codes.) Another example would be encountering a home with minor moisture problems that the program can fix and then weatherize, such as extending a dryer vent to outside the perimeter of the structure.

#### 4. Unvented Space Heaters

A dwelling utilizing an unvented space heater as the primary heating source cannot be weatherized.

In such cases, the Deferral of Services form must be signed by the client. A copy of the form is given to the client and a copy goes into the client file.

The estimator must explain the consequences of using an unvented space heater to the client.

When the client has agreed in writing that they understand the policy and will not use the unvented space heater, weatherization may commence. A completed Hold Harmless Statement must be in the file stating that the client understands the dangers of using the space heater and agrees to use it only if there is a power outage and that they understand that they must provide combustion air to the heater.

#### C. Fire Hazards

##### 1. Combustion Appliance Clearances

Crews check for adequate clearance of space heaters, furnaces, and vents from combustible materials. If the clearance is not sufficient, corrective action must be taken insuring all applicable NFPA codes are followed.

##### 2. Solid Fuel Appliance Checklist

The Solid Fuel Appliance Checklist addresses safety issues, including fire hazards, from wood and coal stoves. Issues relating to the stove, stove pipe, and chimney are addressed.

If there are issues that cannot be addressed by the weatherization program, the Deferral of Services form must be signed by the client. A copy of the form is given to the client and a copy goes into the client file.

##### 3. Carbon Monoxide and Smoke Alarms

Carbon monoxide and smoke alarms are to be installed on every floor of the dwelling, preferably close to the heating source and outside of bedrooms. Client education must be included to insure they clearly understand how and when to change batteries and safely maintain the detector(s).

#### D. Existing Occupant Health Problems

Agencies attempt to identify any health problems and allergies of a dwelling's occupants prior to weatherization work, with an objective to ensure that work will not exacerbate any problems.

#### E. Indoor Air Quality

##### 1. Asbestos

###### Pipes

In the West Virginia Weatherization Assistance Program, asbestos on pipes is relatively rare because there are few boiler systems in the program housing stock. Dealing with asbestos pipes is beyond the training level of program crews, and they are instructed to avoid contact with the pipes. If the condition of the asbestos is deteriorated enough to pose an immediate safety problem in the area, the agency can defer services until the problem is rectified.

###### Siding

When house siding is expected to contain asbestos, crews will not drill through the siding. The crew will attempt to blow the sidewalls from the inside in this case.

##### 2. Radon

There are few instances of previously identified radon problems in the housing stock of the West Virginia Weatherization Assistance program. Program crews do not regularly test for radon. However, testing may be allowed in areas that have been designated as potential regions of concern. Whenever site conditions permit, exposed dirt must be covered with a vapor barrier except for mobile homes. Common practices such as installing 6-mil plastic ground vapor barriers and installing crawl space venting helps to not exacerbate any existing radon problems.

Clients will be provided with the EPA consumer's guide to radon.

##### 1. Formaldehyde and Volatile Organic Compounds (VOCs)

Awareness of potential problems with formaldehyde and volatile organic compounds is important for crews to consider when addressing air sealing. Crews are instructed to remove any VOCs when possible and to give client education on the potential dangers. Crew supervisors are given the flexibility to raise building tightness limits if warranted. If building tightness standards are increased, the reason for the increase must be included in the client file.

#### F. Lead Safe Weatherization (LSW)

Each subgrantee must give notification to the occupants of homes to be weatherized regarding the potential hazards of lead paint and lead paint dust if the home was built prior to 1978. For homes weatherized after December 22, 2008, EPA's new publication "Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools" must be given to an adult occupant of the affected home. For occupied homes, the Weatherization staff, crew, or contractor must have an adult tenant or homeowner sign an acknowledgement after receiving the pamphlet. The pamphlet can also be sent by certified mail with receipt to be placed in the customer file.

Lead-Safe Weatherization (LSW) includes weatherization worker protection, general LSW work practice standards, and lead dust containment standards. Please refer to the latest weatherization field standards for details.

##### 1. Level I Containment.

- a. Level I containment is required in pre-1978 homes when less than 6 ft<sup>2</sup> of interior painted surface per room or 20 ft<sup>2</sup> of exterior painted surface will be disturbed.
- b. Level I containment consists of methods that prevent dust generation and contains all debris generated during the work process. The containment establishes the work area which must be kept secure.
- c. Measures that may fall within this guideline include:
  - i. Installing or replacing a thermostat.
  - ii. Drilling and patching test holes.

- iii. Replacing HEPA filters and cleaning HEPA vacuums.
- iv. Changing furnace filter.
- v. Removing caulk or window putty (interior).
- vi. Removing caulk or window putty (exterior).
- vii. Removing weatherstripping.

## 2. Level 2 Containment.

a. Level 2 containment is required when Weatherization activities will disturb more than 6 ft<sup>2</sup> of interior surface per room or 20 ft<sup>2</sup> of exterior surfaces in homes built prior to 1978. Level 2 containment consists of methods that define a work area that will not allow any dust or debris from work area to spread. Level 2 containment requires the covering of all horizontal surfaces, constructing barrier walls, sealing doorways, covering HVAC registers with approved materials, and closing windows to prevent the spread of dust and debris.

b. Measures requiring level 2 containment may include:

- i. Drilling holes in interior walls.
- ii. Drilling holes in exterior walls, removing painted siding.
- iii. Cutting attic access into ceiling or knee walls.
- iv. Plugging a door in place.
- v. Replacing door jambs and thresholds.
- vi. Replacing windows or doors.
- vii. Furnace replacements.

c. Additionally, Level 2 containment must be used where any of the following is conducted (even if the activities will disturb less than the hazard levels within the Level 1 category):

- i. Window replacement.
- ii. Demolition of painted surface areas.
- iii. Using any of the following: Open-flame burning or torching; machines to remove paint through high-speed operation without HEPA exhaust control; or operating a heat gun at temperatures at or above 1100 FO.

3. There must be adequate documentation in the client file to demonstrate that lead safe weatherization measures were performed when necessary. Documentation should include photos of the site and containment set up, as well as a listing of materials used and measures taken. Post work inspector must also certify that LSW procedures were used and properly implemented.

4. West Virginia WAP will adhere to EPA lead safe rules as written in the "Lead; Renovation, Repair, and Painting Program" Final Rule (LRRPP Final Rule), as directed by DOE. This was fully implemented in April 2010.

5. Weatherization of HUD program housing stock, including HUD Section 8, is becoming more frequent in West Virginia. These units will only be weatherized if HUD will provide certification that abatement or control of any lead paint hazard has been addressed, and will agree that the local agency will not be liable for any lead hazards, provided the safe work practices generally outlined above are employed.

6. Subgrantees are not to weatherize homes where there are suspected or known lead paint hazards and there are any cases of documented or suspected lead poisoning. Additionally, they shall not weatherize homes where there is an extraordinary lead paint hazard and there are no means to abate the hazard, including insufficient funds or insufficient training to properly address the hazard. Homes that have been identified as lead paint hazards or have documented or suspected lead poisoning, will be deferred until such hazard is abated.

All subgrantees are required to be certified as a FIRM and have a certified Lead Renovator on all structures that were built prior to 1978.

## G. Building Structure

West Virginia WAP crews often encounter homes in poor structural condition. In some cases, Weatherization Program services have to be deferred until the dwelling is made safe and able to weatherize. Sometimes agencies coordinate their efforts with other programs to enable and enhance services. Too often, there is no other recourse for the home, and Weatherization providers are forced to do the best they can under the circumstances. Often the Weatherization Program is the referred agency for homes in dire need of repair. Incidental repairs up to \$250 materials can be provided. Often repairs can also be considered air sealing measures, such as patching a floor or wall, and sometimes the repair can be considered a health and safety measure, such as a chimney repair.

Replacement, repair, or installation of windows, doors or window guards is not an allowable health and safety cost but may be allowed as an incidental repair or an efficiency measure if cost justified.

Typical structure repairs performed by Weatherization crews include:

- sealing minor roof leaks;
- minor floor, wall, and ceiling repair;
- window and door casings; and
- minor chimney repair.

## H. Electrical Issues

### I. Knob and Tube Wiring (KTW)

Where knob and tube wiring exists, the following conditions must be met in order to install attic insulation:

- Wiring insulation must be intact and complete with no exposed areas and connections.
- S-type fuses that match the size of the wiring must be installed if they don't already exist. Any modification of the electrical panel must have prior written permission from the client. The agency may wish to contract with a licensed electrician where questionable safety conditions exist.
- When installing cellulose or fiberglass, there must be a minimum of 1-inch clearance from the wiring. With cellulose precaution must be taken to prevent the possible drifting of the product, which could result in contact with the wiring.

The presence of knob and tube wiring, overloaded circuits, live bare wires, asbestos siding, or untreatable moisture in the wall cavities will be allowable reasons for not insulating exterior walls. If the problems can be corrected within reasonable means, the walls can be insulated.

The West Virginia Weatherization Program has funds from DHHR for home repairs and electrical upgrades that can be used to renovate wiring in attics to allow for the installation of attic insulation on a case by case basis.

## 2. Other standards related to electrical safety include:

- Junction boxes must be covered and their locations indicated on the rafters above before insulation is installed.
- Inspect the electrical wiring to determine type(s) of wiring present, its condition, routing, and circuit protection.
- Overfused circuits should be corrected by installing the appropriate size circuit protector matched to the wire gauge. The following protection is required:
  - Not more than 15 amps for #14 wire
  - Not more than 20 amps for #12 wire
- If the circuits continue to trip the breakers or blow fuses, work should be deferred until the problems can be corrected.

Minor electrical repairs are allowed where health or safety of the occupant is at risk. Upgrades and repairs are allowed when necessary to perform specific weatherization measures.

**I. Refrigerant**

Most but not all agencies have at least 1 crew worker with EPA-approved section 608 type 1 certification. Several agencies have workers who are type 2 certified to work on heat pumps and add-on air conditioners. No work involving any refrigerant recovery will be done by anyone not having the appropriate EPA certification. EPA certification courses are offered periodically at the Training and Energy Services Center.

**J. Other Code Compliance Issues**

All installations involving combustion appliances is done according to applicable NFPA fire codes. The Weatherization Program is sometimes not able to bring all combustion appliances up to code. If the condition of the appliance is not deteriorated and is operating within guidelines, the appliance is not necessarily brought up to code. If this were the case, we would be replacing literally every vent encountered. A Hold Harmless Statement explaining the situation to the client is completed and signed to document the situation and the client's awareness of the potential problem.

The National Electric Code is also applicable for the WV WAP in appropriate situations and installations.

Correction of preexisting code compliance issues is not an allowable cost other than where weatherization measures are being conducted. State and local (or jurisdiction having authority) codes must be followed while installing weatherization measures. Condemned properties and properties where "red tagged" health and safety conditions exist that cannot be corrected under this guidance should be deferred.

**III.3.5. Deferral Standards**

There are some health and safety conditions that, until ameliorated, make weatherization of a certain dwelling unfeasible. In some cases, therefore, work for qualified applicants must be delayed, or even possibly denied. Weatherization agencies must attempt to resolve such issues, as well as pursuing reasonable options on behalf of the client, including referrals, and the use of leveraged funds to enable weatherization to proceed.

While program workers have been historically reluctant to defer services, it should be remembered that most agencies have a very long waiting list of approved applicants, and there are typically many homes on the waiting list that are suitable, adaptable, and in dire need of program services. This statement being made, it must be the goal of Weatherization agencies to do all that is reasonable within their means to overcome problems and provide program services.

The West Virginia Governor's Office of Economic Opportunity has devised a model standardized form for deferral of services. Subgrantee agencies are asked to modify the form as needed for their particular circumstances. A significant part of the policy is based on health and safety considerations. A copy of the model is included below.

*Name of Agency*

Weatherization Assistance Program

**Letter of Program Services Deferral Due to Site Conditions**

Job # \_\_\_\_\_ Client Name: \_\_\_\_\_ Date: \_\_\_\_\_

Recently a member of the *name of agency* Weatherization Assistance Program staff inspected your home. Conditions were found that make it unfeasible to weatherize your home at this time. These conditions are checked below.

☐ Structurally unsound dwelling that is not suitable and adaptable to Weatherization, and Weatherization Program does not have the resources to do necessary repairs.

☐ Electrical or plumbing hazards that cannot be resolved prior to or as part of Weatherization services.

☐ The presence of raw sewage around or in any part of the dwelling.

☐ The presence of a dead animal, or animal feces, in an area where program staff must install weatherization measures.

☐ Excessive debris and clutter around the dwelling that limits access to the dwelling.

☐ Client is uncooperative, abusive, or threatening to the crew, or there is an apparent threat of violence or abuse to any program worker, or any household member, during the weatherization process.

☐ The presence or use of any controlled substance in the dwelling during the Weatherization process.

☐ Environmental hazards, such as serious moisture, mold, or mildew problem, known excessive radon, friable asbestos, excessive lead based paint, or other environmental hazards that cannot be resolved prior to or as part of the Weatherization services.

☐ Evidence of substantial infestation of rodents, insects, bats, or other harmful/objectable animals that are difficult to control.

☐ Major remodeling is in progress, limiting the proper installation of weatherization measures.

☐ Substantial standing water in or around the crawl space or basement area limiting the proper completion of Weatherization measures.

☐ Dwelling resident has a medical condition that prohibits the installation of insulation and/or other weatherization measures.

☐ No cost-effective or appropriate health and safety measures can be done to the house resulting in minimal energy savings.

☐ Other. Please specify.

The policy of the (*enter agency name*) Weatherization Assistance Program is to provide Weatherization services in a safe and cost-effective manner, without undue hazards to household members or our staff. Given the conditions noted above, we are unable to provide you with Weatherization Program services until the checked conditions are resolved.

Please contact the agency at (*enter phone number*) when the noted conditions are resolved. If you believe a mistake has been made in this determination, please contact me as soon as possible.

Sincerely,

Weatherization Coordinator

(*enter agency name*)

cc: client file

2011

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